

## **NRR-PMDAPEm Resource**

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**From:** DiFrancesco, Nicholas  
**Sent:** Monday, December 07, 2015 3:42 PM  
**To:** Michael Richardson (mjrm@pge.com)  
**Cc:** 'Jahangir, Nozar' (NxJ1@pge.com); Shams, Mohamed  
**Subject:** Clarifications Related to Seismic Audit Information Requests

Mr. Richardson,

In continuation of the Sept 4, 2015, Regulatory Audit plan to review the Diablo Canyon Site Response Analysis (Agencywide Documents Access and Management System [ADAMS] No. ML152448099), the NRC staff and PG&E conducted an audit meeting on December 3, 2015. During this meeting the NRC staff and PG&E representatives discussed information needs associated with prior NRC technical requests. Below is a summary of clarifications to be included in the PG&E December 2015 letter to support understanding of the site response approach:

### Response Clarifications

- 1) Use consistent terminology for bedrock vs. base rock (or source)
- 2) A conclusion section that summarizes overall approach, underpinning philosophy, strengths and weaknesses of approaches, and outcome would be beneficial.
- 3) With regard to Section 2.5 and Table 2-2 (and potentially other sections) the numerical depth values for low strain damping and kappa (300 ft and 500 ft) are not consistent and should be clarified or corrected.
- 4) For Figure 3-1, correct the deep profile gradient to have one branch; and rearrange the nonlinear tree to clarify weighting.
- 5) For Figure 3-4 and 3-5, add 3 NL to these plot; list maximum strain at the GMRS level in the accompanying text.
- 6) For Figure 3-6, note that this is Amp 3, on the y-axis note reference rock
- 7) For Figure 3-7, add SWUS
- 8) In Section 3, add a "cartoon" of the SA 0, SA 1, SA 2, and Amp 1, Amp 2, and Amp 3
- 9) For Table 4-5, and any other tabular data that could be clarified with graphical representation, add a plot or graph
- 10) For Section 5.2, expand to capture discussion on potential path effects; clarify the discussion with regard to frequency band that is of interest; add comparison plots for analytical vs. empirical UHRS  $10^{-4}$  &  $10^{-5}$
- 11) For the first set of equations in Section 5.4, add a second "where" equation where  $dh/dr$  is SA2 hazard
- 12) Citation for deep 3D model (Fugro report)

### Separately from the December response the staff requests to review of the following information

- 1) Review of the final calculation package including Approach 3 code and compiled version
- 2) Hardebeck data set/velocity model used to relocate hypocenters

This email will be added to public ADAMS and incorporated as part of the audit summary.

Please let me know if you have any questions.

Thanks,

*Nick*

Sr. Project Manager - Seismic Reevaluations  
U.S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation  
Japan Lesson Learned Project Division  
[nicholas.difrancesco@nrc.gov](mailto:nicholas.difrancesco@nrc.gov) | Tel: (301) 415-1115

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**Recipients:**

"Jahangir, Nozar' (NxJ1@pge.com)" <NxJ1@pge.com>  
Tracking Status: None  
"Shams, Mohamed" <Mohamed.Shams@nrc.gov>  
Tracking Status: None  
"Michael Richardson (mjrm@pge.com)" <mjrm@pge.com>  
Tracking Status: None

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