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PG&E Letter DCL-10-072

10 CFR 50.90

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

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Supplement to Response to NRC Request for Additional Information Regarding
License Amendment Request 09-06, "Critical Damping Value for Structural
Dynamic Qualification of the Control Rod Drive Mechanism Pressure Housings"
(TAC Nos. ME2995 and ME2996)

Reference: 1. PG&E Letter DCL-09-86, "License Amendment Request 09-06,
'Critical Damping Value for Structural Dynamic Qualification of the
Control Rod Drive Mechanism Pressure Housings,'" dated
December 14, 2009. (ADAMS Accession No. ML093580092)

Dear Commissioners and Staff:

By letter dated December 14, 2009 (Reference 1), Pacific Gas and Electric Company (PG&E) submitted a license amendment request to revise the licensing basis and the Final Safety Analysis Report Update (FSARU) to allow use of a damping value of 5 percent of critical damping for the structural dynamic qualification of the control rod drive mechanism pressure housings on the replacement reactor vessel head for the design earthquake, double design earthquake, Hosgri earthquake, and loss-of-coolant accident (LOCA) loading conditions.

By e-mail dated June 16, 2010, the NRC staff requested additional information required to complete the review of LAR 09-06. PG&E's responses to the staff's questions are provided in the enclosure.

This information does not affect the results of the technical evaluation or the no significant hazards consideration determination previously transmitted in Reference 1.

PG&E makes no regulatory commitments (as defined by NEI 99-04) in this letter. This letter includes no revisions to existing regulatory commitments.

ADD 1
NRR



If you have any questions, or require additional information, please contact Tom Baldwin at (805) 545-4720.

I state under penalty of perjury that the foregoing is true and correct.

Executed on July 2, 2010.

Sincerely,

James R. Becker
Site Vice President

tcg4231 50276288

Enclosure

cc: Diablo Distribution

cc/enc: Gary W. Butner, Acting Branch Chief, California Department of Public Health

Elmo E. Collins, NRC Region IV

Michael S. Peck, NRC, Senior Resident Inspector

Alan B. Wang, Project Manager, Office of Nuclear Reactor Regulation

**Supplement to PG&E Response to NRC Request for Additional Information
Regarding License Amendment Request (LAR) 09-06, "Critical Damping Value
for Structural Dynamic Qualification of the Control Rod Drive Mechanism
Pressure Housings"**

NRC Question 1:

In the supplement to responses to RAI # 1.(c), with regard to Table 5, please revise the table to include LOCA analysis method and damping used for original CRDM and replacement CRDM.

PG&E Response:

The information requested is in the following revised Table 5.

**Table 5: Original and Replacement CRDM Seismic Analysis Method
and Damping Values (% Critical Damping)**

		DE		DDE		HE		LOCA	
		Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
Original CRDM	Analysis Method	Non-linear Time History ¹	Static Equivalent	Non-linear Time History	Static Equivalent	Note 2	Static Equivalent	Note 5	Note 5
	Damping	3%	Note 3	3%	Note 3	4%	Note 3		
Replacement CRDM	Analysis Method	Non-linear Time History	USM ⁴ Response Spectra	Non-linear Time History	USM ⁴ Response Spectra	USM ⁴ Response Spectra	USM ⁴ Response Spectra	Response Spectra ⁵	Response Spectra ⁵
	Damping	5%	5%	5%	5%	5%	5%	5%	5%

- ¹ The DDE analysis was used to qualify the CRDMs for DE.(Used DE allowables)
- ² The DDE input response spectra envelopes the HE input response spectra as described in DCPD FSARU Section 3.7.3.15.3.
- ³ The CRDM fundamental frequency in the vertical direction is approximately 100 Hz (i.e., rigid). A static equivalent method vertical load per DCPD FSARU Section 3.7.2.1.5 was used to evaluate the CRDM nozzle between the top of the head and the dissimilar metal weld. Damping is not applicable to this analysis methodology.
- ⁴ USM refers to the use of Uniform Support Motion (Enveloped Spectra) as input to the response spectra analysis.
- ⁵ LOCA moment loads used to evaluate the CRDM nozzle between the top of the head and the dissimilar metal weld is an enveloping value based on the maximum of the large break LOCA moments for two 4-loop plants. The LOCA axial and shear loads are based on the worst large break LOCA plus SSE loads from a sampling of Westinghouse plants. This is conservative since only small breaks based on leak-before-break are required for DCPD.
- ⁶ LOCA loads are applied where the CRDM attaches to the reactor vessel closure head.

NRC Question 2:

In the supplement to responses to RAI # 1 (b), the code used for replacement CRDM analysis is stated as ASME B&PV Code 2001 edition through 2003 addenda. What is the code edition and addenda for the original CRDM analysis?

PG&E Response:

The original CRDM analysis Code is the ASME Section III B&PV Code 1965 Edition through Summer 1966 Addenda for Unit 1 and the 1968 Edition for Unit 2. The original CRDM nozzle between the top of the head and the dissimilar metal weld was reanalyzed in 2009 per the ASME Section III B&PV Code 1998 Edition through 2000 Addenda. Use of this later Code was reconciled to the Codes of Construction.

The replacement CRDM analysis Code is the ASME Section III B&PV Code 2001 Edition through 2003 Addenda.