



**Pacific Gas and  
Electric Company™**

**Gregory M. Rueger**  
Senior Vice President—  
Generation and  
Chief Nuclear Officer

*US Mail*  
Mail Code B32  
Pacific Gas and Electric Company  
PO Box 770000  
San Francisco, CA 94177-0001

*Overnight Mail*  
Mail Code B32  
Pacific Gas and Electric Company  
77 Beale Street, 32nd Floor  
San Francisco, CA 94105-1814

415 973 4684  
Fax 415 973 2313

September 13, 2002

PG&E Letter DCL-02-112

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  
Response to Second NRC Request for Additional Information Regarding License  
Amendment Request 01-04, "Revision to Technical Specifications 3.9.4  
Containment Penetrations," and License Amendment Request 01-05, "Revision to  
Technical Specification 1.1, Definitions, Dose Equivalent I-131, and Revised Steam  
Generator Tube Rupture and Main Steam Line Break Analyses"

Dear Commissioners and Staff:

On August 27, and September 3, 2002, the NRC staff identified additional information needed to complete their evaluation of License Amendment Requests (LAR) 01-04 and 01-05.

LAR 01-04 proposes to revise the limiting condition for operation for Technical Specification (TS) 3.9.4, "Containment Penetrations," to allow the equipment hatch, both personnel air lock doors and both emergency air lock doors to remain open, and penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative control, during core alterations and movement of irradiated fuel assemblies. LAR 01-04 was submitted by PG&E Letter DCL-01-104, "License Amendment Request 01-04, Revision To Technical Specifications 3.9.4 Containment Penetrations," dated October 17, 2001. PG&E Letter DCL-02-020, "Supplement 1 to License Amendment Request 01-04, Revision To Technical Specifications 3.9.4 Containment Penetrations," dated February 26, 2002, provided guidance that would be used in case of weather conditions that could necessitate closure of the containment equipment hatch.

LAR 01-05 proposes to modify TS 1.1, "Definitions, Dose Equivalent I-131," to allow use of thyroid dose conversion factors listed in the International Commission on Radiological Protection Publication 30, "Limits for Intakes of Radionuclides by Workers," 1979, in the Steam Generator Tube Rupture and Main Steam Line Break

*Pool*



radiological consequences analyses. LAR 01-05 was submitted by PG&E Letter DCL-01-115, "License Amendment Request 01-05, Revision to Technical Specification 1.1, Definitions, Dose Equivalent I-131, and Revised Steam Generator Tube Rupture and Main Steam Line Break Analyses," dated November 16, 2001.

PG&E Letter DCL-02-095, "Response to NRC Requests for Additional Information Regarding License Amendment Request 01-04, "Revision to Technical Specifications 3.9.4 Containment Penetrations," and License Amendment Request 01-05, "Revision to Technical Specification 1.1, Definitions, Dose Equivalent I-131, and Revised Steam Generator Tube Rupture and Main Steam Line Break Analyses," provided PG&E's response to the initial request for additional information for LAR 01-04 and LAR 01-05.

PG&E's response to the second request for additional information is provided in Enclosure 1 for LAR 01-04 and Enclosure 2 for LAR 01-05.

This additional information does not affect the results of the safety evaluations and no significant hazards determinations previously transmitted in PG&E Letters DCL-01-104 and DCL-01-115.

If you have any questions regarding this response, please contact Patrick Nugent at (805) 545-4720.

Sincerely,

A handwritten signature in black ink, appearing to read 'Gregory M. Rueger'.

Gregory M. Rueger  
*Senior Vice President – Generation and Chief Nuclear Officer*

JER

Enclosures

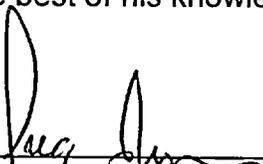
cc:/enc Edgar Bailey, DHS  
Ellis W. Merschoff  
David L. Proulx  
Girija S. Shukla  
Diablo Distribution

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

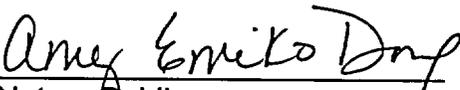
_____ )	Docket No. 50-275
In the Matter of )	Facility Operating License
PACIFIC GAS AND ELECTRIC COMPANY )	No. DPR-80
)	
Diablo Canyon Power Plant )	Docket No. 50-323
Units 1 and 2 )	Facility Operating License
_____ )	No. DPR-82

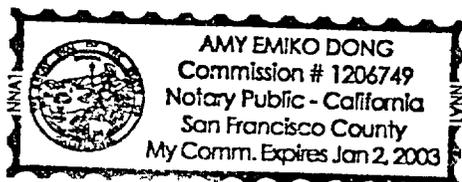
AFFIDAVIT

Gregory M. Rueger, of lawful age, first being duly sworn upon oath says that he is Senior Vice President - Generation and Chief Nuclear Officer of Pacific Gas and Electric Company; that he has executed this response to the request for additional information on License Amendment Request 01-04 and License Amendment Request 01-05 on behalf of said company with full power and authority to do so; that he is familiar with the content thereof; and that the facts stated therein are true and correct to the best of his knowledge, information, and belief.

  
\_\_\_\_\_  
Gregory M. Rueger  
*Senior Vice President - Generation and Chief Nuclear Officer*

Subscribed and sworn to before me this 13th day of September 2002.  
County of San Francisco  
State of California

  
\_\_\_\_\_  
Notary Public



**PG&E Response to Second NRC Request for Additional Information Regarding License Amendment Request (LAR) 01-04, "Revision To Technical Specifications 3.9.4 Containment Penetrations"**

Request No.1

*Provide the maximum unfiltered air leakage rate into the control room that will still meet the 30 Rem thyroid dose acceptance criterion in SRP Section 6.4.*

PG&E Response to Request No.1

PG&E has performed a parametric assessment of the effect of unfiltered control room leakage on exposures to control room personnel. Three accidents were assessed; (1) fuel handling accident (FHA) with containment open, (2) main steamline break (MSLB) with pre-existing iodine spiking, and (3) MSLB with accident-induced iodine spiking. The assessment was made using previous calculations and varying the leakage values. The results show that the Diablo Canyon Power Plant (DCPP) control room doses are relatively insensitive to the level of leakage assumed. The bounding case from this assessment is the MSLB with accident-induced iodine spiking. For this case, the results show the leakage would have to exceed approximately 4400 cubic feet per minute (cfm) before the 30 Rem thyroid dose acceptance criterion of Standard Review Plan (SRP) Section 6.4, would be exceeded.

Gross leakage of this magnitude would be expected to be easily observed and would require degradation of the control room pressurization system to a level in which it would be impossible to maintain positive pressure in the control room envelope. Leakage at this level is not considered credible. Credible leakage is at least an order of magnitude less than 4400 cfm. No credible leakage rates resulted in exposure to control room personnel at or above the 10 CFR 50 Appendix A General Design Criteria 19 limits.

Request No.2

*Provide the DCPP control room model and its pertinent input data for the control room operator dose calculation. Provide information similar to LAR 01-05 Table 11, "Control Room Model," and Table 12, "Additional SGTR Control Room Dose Related Inputs," with appropriate changes to the table titles to make them applicable to LAR 01-04.*

PG&E Response to Request No.2

Tables A and B summarize the control room model input information used in the post-FHA control room operator dose calculation:

Table A  
Control Room Model Used for Fuel Handling Accident Evaluation

Control Room Volume	170,000 ft <sup>3</sup>
Control Room Unfiltered In-Leakage	10 cfm
Control Room Filtered Inflow	2100 cfm
Control Room Filtered Recirculation	2100 cfm
Control Room Filter Efficiency	95%

Table B  
Additional Control Room Dose Related Inputs  
Used for Fuel Handling Accident Evaluation

Time (hours)	Control Room $\chi/Q$ Filtered Pressurization (sec/m <sup>3</sup> )	Control Room $\chi/Q$ Unfiltered Infiltration (sec/m <sup>3</sup> )	Control Room Breathing Rate (m <sup>3</sup> /sec)	Control Room Occupancy Factor
0 - 8	$7.05 \times 10^{-5}$	$1.96 \times 10^{-4}$	$3.47 \times 10^{-4}$	1.0
8 - 24	$5.38 \times 10^{-5}$	$1.49 \times 10^{-4}$	$3.47 \times 10^{-4}$	1.0
24 - 96	$3.91 \times 10^{-5}$	$1.08 \times 10^{-4}$	$3.47 \times 10^{-4}$	0.6
> 96	$2.27 \times 10^{-5}$	$6.29 \times 10^{-5}$	$3.47 \times 10^{-4}$	0.4

**PG&E Response to Second NRC Request for Additional Information Regarding LAR 01-05, "Revision to Technical Specification 1.1, Definitions, Dose Equivalent I-131, and Revised Steam Generator Tube Rupture and Main Steam Line Break Analyses"**

Request No.1

*Provide the maximum unfiltered air inleakage rate into the control room that will still meet the 30 Rem thyroid dose acceptance criterion in the Standard Review Plan (SRP) Section 6.4.*

PG&E Response to Request No.1

This is the same request as Request No.1 for License Amendment Request (LAR) 01-04. The PG&E response is repeated here for completeness.

PG&E has performed a parametric assessment of the effect of unfiltered control room inleakage on exposures to control room personnel. Three accidents were assessed; (1) FHA with containment open, (2) MSLB with pre-existing iodine spiking, and (3) MSLB with accident-induced iodine spiking. The assessment was made using previous calculations and varying the inleakage values. The results show that the DCPD control room doses are relatively insensitive to the level of inleakage assumed. The bounding case from this assessment is the MSLB with accident-induced iodine spiking. For this case, the results show the inleakage would have to exceed approximately 4400 cfm before the 30 Rem thyroid dose acceptance criterion of SRP Section 6.4, would be exceeded.

Gross inleakage of this magnitude would be expected to be easily observed and would require degradation of the control room pressurization system to a level in which it would be impossible to maintain positive pressure in the control room envelope. Inleakage at this level is not considered credible. Credible inleakage is at least an order of magnitude less than 4400 cfm. No credible inleakage rates resulted in exposure to control room personnel at or above the 10 CFR 50 Appendix A General Design Criteria 19 limits.

As seen in the results discussed above, the effect of unfiltered inleakage on calculated MSLB control room doses is relatively low. This insensitivity is primarily the result of filtered recirculation and filtered intake air flow inside the control room. At DCPD, the filtered recirculation flow rate results in a complete turnover of the control room air volume in under 90 minutes. Similarly, the filtered intake flow rate results in a complete replacement of the air in the control room in about the same amount of time. These flow rates, in conjunction with the qualitative conclusion that the MSLB and steam generator tube rupture (SGTR) releases are of comparable magnitude (the 0-2 hour exclusion area boundary doses are approximately the same), leads to the conclusion that calculated SGTR doses for DCPD would also be relatively insensitive to changes in

the unfiltered inleakage assumed in the analysis. Thus no SGTR-specific parametric assessments were performed.

Request No.2

*Provide the assumed reactor coolant system mass used in the SGTR dose analysis.*

PG&E Response to Request No.2

The reactor coolant system mass assumed in the SGTR dose analysis is 2.16E8 grams.

Request No.3

*Provide the flashed break flow that goes to the condenser.*

PG&E Response to Request No.3

Flashed break flow occurring prior to reactor trip is assumed to go to the condenser. PG&E Letter DCL-01-115, "License Amendment Request 01-05, Revision to Technical Specification 1.1, Definitions, Dose Equivalent I-131, and Revised Steam Generator Tube Rupture and Main Steam Line Break Analyses," Enclosure 1, page 12 states "A total of 272,400 lbm of primary water is transferred to the secondary side of the ruptured SG before break flow is terminated. A total of 17,904 lbm of this break flow is assumed to flash to steam upon entering the SG." Of the 17,904 lbm, it was assumed 1,570 lbm goes to the condenser. This value is provided in PG&E Letter DCL-01-115, Enclosure 1, Table 2.

Request No.4

*Explain how the 143 gpm letdown flow rate was derived.*

PG&E Response to Request No.4

PG&E Letter DCL-01-115, Enclosure 1, page 15 states, "The initial RCS iodine concentration activities (Table 3) were converted to activities based on a letdown flow rate of 143 gpm..." The 143 gpm letdown value includes 120 gpm letdown, 12 gpm uncertainty, 10 gpm identified leakage, and 1 gpm unidentified leakage.

Request No.5

*Provide the current licensing basis leak rate limit for steam generator (SG) alternate repair criteria (ARC) and the calculated leak rate from PG&E Letter DCL-02-098, "Special Report 02-02 - Results of Steam Generator Inspections for Diablo Canyon Power Plant Unit 1 Eleventh Refueling Outage," dated August 22, 2002.*

PG&E Response to Request No.5

DCL-02-098, Enclosure 1, page 1-5 states:

*"Accident-Induced Leakage Performance Criteria:* Calculated W star ( $W^*$ ) leak rates under postulated steam line break (SLB) conditions, when combined with calculated leak rates from application of Generic Letter 95-05 voltage-based ARC and Primary Water Stress Corrosion Cracking ARC, shall not exceed 12.8 gallons per minute (gpm) (at room temperature) in the faulted SG for condition monitoring and 10.5 gpm (at room temperature) for operational assessment. The 12.8 gpm condition monitoring limit is the current licensing basis leak rate limit as approved in NRC letter to PG&E dated March 12, 1998. The more conservative 10.5 gpm operational assessment limit is pending NRC approval of LAR 01-05, which is expected in late 2002 during Unit 1 Cycle 12. The aggregate calculated SLB leakage from application of all ARC at end of cycle (EOC) 11 is 0.368 gpm for the limiting SG. The aggregate calculated SLB leakage from application of all ARC at EOC 12 is 1.115 gpm for the limiting SG. In both assessments, SLB leakage is less than the allowable limit. Therefore, the performance criterion has been satisfied for condition monitoring at EOC 11 and operational assessment at EOC 12."