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PG&E Letter DCL-02-095

U.S. Nuclear Regulatory Commission
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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 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"

Dear Commissioners and Staff:

On July 9, 2002 and March 1, 2002, respectively, the NRC staff identified additional information required in order to complete their evaluation associated with 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 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 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's responses to the requests for additional information are included in Enclosures 1 and 2, respectively, for LAR 01-04, and 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,

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

JER
Enclosures
cc: Edgar Bailey, DHS
Ellis W. Merschoff
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Diablo Distribution

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of PACIFIC GAS AND ELECTRIC COMPANY	)	Docket No. 50-275 Facility Operating License No. DPR-80
Diablo Canyon Power Plant Units 1 and 2	)	Docket No. 50-323 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 14th day of August 2002.
County of San Luis Obispo
State of California

Notary Public

SANDRA L. RECTOR
Commission # 1339380
Notary Public - California
San Luis Obispo County
My Comm Expires Jan 12, 2006

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

Question 1

In Section 4 of Enclosure 1 to the submittal, you provided new radiological consequence analysis for the control room operator following the postulated fuel handling accident inside containment. Provide the unfiltered air in-leakage rate into the control room you assumed in your analysis with its technical justification.

PG&E Response to Question 1

The unfiltered in-leakage assumed in the analysis is 10 standard cubic feet per minute (scfm). This value is the current Diablo Canyon Power Plant (DCPP) licensing basis and was carried over into this analysis.

The DCPP control room heating, ventilating, and air conditioning envelope is a pressurized volume with a filtered air supply and filtered recirculation. The current design basis unfiltered air in-leakage is 10 scfm and is used to account for the potential introduction of unfiltered outside air due to the ingress and egress of personnel through the control room pressurization boundary due to actions required to support post-accident recovery. This value is consistent with the value recommended by Standard Review Plan (NUREG-0800) Section 6.4, "Control Room Habitability System," for contributions due to personnel ingress and egress required by plant emergency procedures and recovery actions.

No additional in-leakage is included in the DCPP analysis since the design basis is that the control room is pressurized when in ventilation mode 4. As long as the control room remains at a pressure greater than that of the surrounding areas, net leakage will be in the outward direction. The potential for unfiltered in-leakage from sources of higher pressure than the control room or its ducting is considered low. The design and construction of the DCPP control room ventilation system and positive pressure envelope provide a high level of confidence that there is very little to no in-leakage other than through the in-leakage assigned to ingress/egress associated with event recovery.

Recent testing performed at two STARS plants supports this position. The Palo Verde Nuclear Generating Station (PVNGS) and the Comanche Peak Steam Electric Station (CPSES) both recently completed testing of their control room ventilation systems. The ventilation configurations of these two plants bound the range of control room ventilation configurations of the STARS plants.

The testing performed at PVNGS and CPSES established baseline in-leakage rates for both plants and also compared multiple testing methods for accuracy and acceptability. Testing at both plants included component and tracer gas testing with both methods yielding consistent results. In both cases, the results showed no unfiltered in-leakage into the control room positive pressure envelope.

DCPP will use the component test method to verify that control room unfiltered in-leakage is negligible or non-existent. The results of this testing will be factored into any assessment of control room habitability at that time. Currently, plans for component testing are in the process of being developed and DCPP anticipates that testing will be performed after the completion of the next refueling outage (2R11). The expectation is that this testing will be performed during the spring of 2003.

Question 2

In Section 4 of Enclosure 1 to the submittal, you stated that the values assumed for individual fission product inventories are calculated based on 105 percent of full power (3580 MWt) at the end of core life immediately preceding shutdown. Provide the individual fission product inventories assumed.

PG&E Response to Question 2

Shutdown isotopic inventories for the isotopes of interest are summarized below. The inventory listed is for an individual fuel assembly from a core of 193 fuel assemblies operating at 3580 MWt.

Isotope	Composite Source term - Ci/assy
I-131	5.057E+05
I-132	7.283E+05
I-133	1.032E+06
I-134	1.165E+06
I-135	9.611E+05
Kr-83m	8.196E+04
Kr-85m	1.901E+05
Kr-85	6.353E+03
Kr-87	3.828E+05
Kr-88	5.416E+05
Kr-89	6.855E+05
Xe-131m	5.661E+03
Xe-133m	3.187E+04
Xe-133	9.993E+05
Xe-135m	2.021E+05
Xe-135	2.886E+05
Xe-137	9.140E+05
Xe-138	9.477E+05

Question 3

Provide the noble gases and iodines activities in the fuel rod gap prior to fuel movement (100 hour decay period) that is available for release to the water surrounding the failed fuel assembly. Also provide the amounts of fission product activities (in curies) released to the environment following the postulated fuel handling accident.

PG&E Response to Question 3

The noble gas and iodine activity assumed in the fuel assembly and released to containment at the time of the event were as follows:

Isotope	Activity at 100 Hours After Shutdown(Ci)	Containment Activity based on DF200 (Ci)
I-131	3.625E+05	299.0625
I-132	3.042E+05	250.965
I-133	3.783E+04	31.21
I-134	0	0
I-135	2.689E+01	0.0222
Kr-83m	9.554E-08	1.5764E-08
Kr-85m	3.679E-02	0.0060704
Kr-85	6.350E+03	3143.25
Kr-87	0	0
Kr-88	1.350E-05	2.2275E-06
Kr-89	0	0
Xe-131m	5.469E+03	902.385
Xe-133m	1.306E+04	2154.9
Xe-133	6.914E+05	114081
Xe-135m	4.264E+00	0.70356
Xe-135	1.327E+03	218.955
Xe-137	0	0
Xe-138	0	0

The entire inventory released to containment was assumed to be released to the environment.

Question 4

Provide the control room atmospheric relative concentrations (X/Q values) used in your new dose calculation performed for the control room operator.

PG&E Response to Question 4

The X/Q values used in the LAR 01-04 analysis are:

Atmospheric Dispersion Factors in sec/m^3			
Control Room[1]		Pressurization	Infiltration
	0 - 8 hours	7.05E-05	1.96E-04
	8 - 24 hours	5.38E-05	1.49E-04
	24 - 96 hours	3.91E-05	1.08E-04
	96 - 720 hours	2.27E-05	6.29E-05
Exclusion Area Boundary (EAB)[2], 800 meters			
	0 - 2 hours	5.29E-04	
Low Population Zone (LPZ)[2], 10,000 meters			
	0 - 8 hours	2.20E-05	
	8 -24 hours	4.75E-06	
	24 - 96 hours	1.54E-06	
	96 - 720 hours	3.40E-07	

[1]The Control Room X/Q values are from FSAR Update Table 15.5-6.
[2]The EAB and LPZ X/Q values are from FSAR Update Table 15.5-3.

PG&E Response to NRC Request for Additional Information Regarding 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"

Question 1

The licensee assumed, among other things, a 10 cfm control room unfiltered air in-leakage in control room operator dose calculations for SGTR and MSLB accident re-analyses in license amendment request 01-05. [The staff] will not accept this assumption without verification by a suitable in-leakage test. The control room unfiltered air in-leakage is an important parameter in determining control room operator dose following DBAs. The licensee is a member of the STARS group which is developing and testing an integrated test method for control room unfiltered air in-leakage. They are keeping the NRC informed. [The staff asks] if DCPP has performed any test, or is planning to perform a test, in concert with STARS program. If DCPP is planning a test. what is the schedule and how would it be different from the tests performed at Comanche Peak and Palo Verde? Are Comanche Peak test results available? What is the current program status on the development of control room unfiltered in-leakage tests?

Note: In a telephone conference call on July 25, 2002, the NRC staff indicated that PG&E's response to Question 1 for LAR 01-04 would also address the above question for LAR 01-05. The response for Question 1 for LAR 01-04 is repeated below.

PG&E Response to Question 1

The unfiltered in-leakage assumed in the analysis is 10 standard cubic feet per minute (scfm). This value is the current Diablo Canyon Power Plant (DCPP) licensing basis and was carried over into this analysis.

The DCPP control room heating, ventilating, and air conditioning envelope is a pressurized volume with a filtered air supply and filtered recirculation. The current design basis unfiltered air in-leakage is 10 scfm and is used to account for the potential introduction of unfiltered outside air due to the ingress and egress of personnel through the control room pressurization boundary due to actions required to support post-accident recovery. This value is consistent with the value recommended by Standard Review Plan (NUREG-0800) Section 6.4, "Control Room Habitability System," for contributions due to personnel ingress and egress required by plant emergency procedures and recovery actions.

No additional in-leakage is included in the DCPP analysis since the design basis is that the control room is pressurized when in ventilation mode 4. As long as the control room remains at a pressure greater than that of the surrounding areas, net leakage will be in the outward direction. The potential for unfiltered in-leakage from sources of higher pressure than the control room or its ducting is considered low. The design and

construction of the DCPP control room ventilation system and positive pressure envelope provide a high level of confidence that there is very little to no in-leakage other than through the in-leakage assigned to ingress/egress associated with event recovery.

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