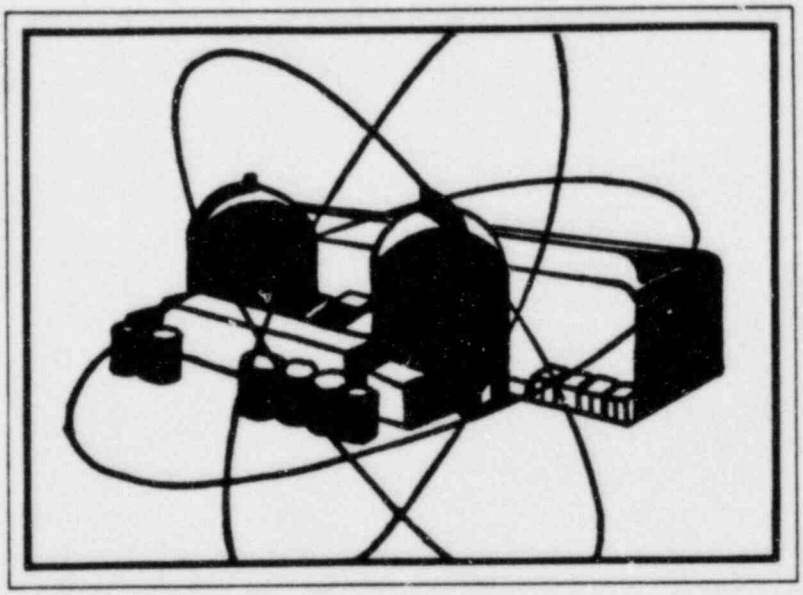
DIABLO CANYON
NUCLEAR POWER PLANT

SEMIANNUAL EFFLUENT REPORT

JULY 1 - DECEMBER 31, 1984



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DIABLO CANYON NUCLEAR POWER PLANT

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 1984

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INTRODUCTION

This Semiannual Radioactive Effluent Release Report summarizes the gaseous and liquid effluent releases made from Diablo Canyon Power Plant's Unit 1 for the third and fourth quarters of 1984. This report also includes a summary of solid radwaste shipments, the annual summary of the Meteorological data for the site during 1984, and an assessment of radiation dose due to the release of liquid and gaseous effluents during 1984. This report contains the information required by Technical Specifications 6.9.1.8 and 6.9.1.9 and is generally presented in the format of Regulatory Guide 1.21, Appendix B.

The Unit 1 reactor was critical for short periods in July and August and then shut down until the power ascension testing program started in November. Unit 1 had progressed to the 50% power plateau by the end of December.

There were no shipments of solid radioactive waste made during this report period. There were no changes made to the Process Control Program during this report period.

PART ONE

GASEOUS AND LIQUID EFFLUENTS

SUPPLEMENTAL INFORMATION

I Regulatory Limits

A. Gaseous Effluents

1. Noble Gas Dose Rate Limit

The dose rate in unrestricted areas due to radioactive noble gases released in gaseous effluents is limited to less than or equal to 500 millirem per year to the total body and less than or equal to 3000 millirem per year to the skin. (Tech. Spec. 3.11.2.1.a.)

2. Particulate and Iodine Dose Rate Limit

The dose rate in unrestricted areas due to radioiodines and radioactive materials in particulate form, and radionuclides (other than noble gases) with half lives greater than 8 days in gaseous effluents is limited to less than or equal to 1500 millirem per year to any organ. (Tech. Spec. 3.11.2.1.b.)

3. Noble Gas Dose Limit

The air dose due to noble gases released in gaseous effluents, from each reactor unit, from the site, is limited to the following.

	CALENDAR QUARTER	CALENDAR YEAR
Gamma radiation	5 millirad	10 millirad
Beta radiation	10 millirad	20 millirad

(Tech. Spec. 3.11.2.2)

4. Particulate and Iodine Dose Limit

The dose tc an individual from radioiodines and radioactive materials in particulate form and radionuclides (other than noble gases) with half lives greater than 8 days in gaseous effluents released, from each reactor unit, from the site, is limited to less than or equal to 7.5 millirem to any organ in any calendar quarter and less than or equal to 15 millirem to any organ during a calendar year. (Tech. Spec. 3.11.2.3)

B. Liquid Effluents

1. Concentration

The concentration of radioactive material released from the site is limited to the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration is limited to 2×10^{-4} microcuries/ml total activity. (Tech. Spec. 3.11.1.1)

2. Dose

The dose or dose commitment to an individual from radioactive materials in liquid effluents released, from each reactor unit, from the site, is limited to the following:

	CALENDAR QUARTER	CALENDAR YEAR
Total Body	1.5 millirem	3 millirem
Any Organ	5 millirem	10 millirem

(Tech. Spec. 3.11.1.2)

II Maximum Permissible Concentrations

A. Gaseous Effluents

Maximum permissible concentrations are not used in the methodology for determining allowable release rates for gaseous effluents at Diablo Canyon Power Plant.

B. Liquid Effluents

The concentrations listed in 10 CFR 20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases are used for determining the allowable release rate at the point of discharge from the site for liquid effluents. For dissolved or entrained noble gases, the allowable release rate concentration at the point of discharge is limited to 2×10^{-4} microcuries per milliliter total activity for liquid effluents.

III Measurements and Approximations of Total Radioactivity

A. Gaseous Effluents

1. Fission and Activation Gases

The gaseous radioactivity released from the plant vent is measured by a pair of off line monitors each using

Geiger-Mueller detector readings from these monitors. These monitor readings are correlated to isotopic concentration based on isotopic analysis of a grab sample using a germanium detector. A grab sample is obtained and analyzed at least weekly. The isotopic mixture is assumed to remain constant between grab sample analyses. Containment purges, gas decay tank releases and air ejector discharge are all routed through the plant vent for release. The gaseous radioactivity released from the steam generator blowdown tank vent is measured by analyzing grab samples with a germanium detector. The isotopic concentrations are assumed to remain constant between grab samples.

When the plant vent measurements are below the lower limit of detection, the individual batch release data is used to characterize the radioactivity discharged from the gas decay tanks and containment.

Other potential pathways for releasing gaseous radioactivity are periodically monitored by collecting grab samples and analyzing these samples with a germanium detector system.

2. Iodines

Radioiodines released from the plant vent are monitored by continuous sample collection on silver zeolite cartridges. The cartridges are changed at least weekly and analyzed with a germanium detector. The radioiodine releases are averaged over the period of cartridge sample collection.

Other potential pathways for releasing radioiodines are periodically monitored by collecting samples using charcoal cartridges and analyzing these cartridges with a germanium detector.

3. Particulates

Radioactive materials in particulate form released from the plant vent are monitored by continuous sample collection on particulate filters. The filters are changed at least weekly and analyzed with a germanium detector. The particulate radioactivity is averaged over the period of particulate filter sample collection. Each filter is analyzed for alpha emitters using an internal proportional counter. All of the plant vent particulate filters collected during a quarter are used for the composite analysis for strontium 89 and 90 which is counted on an internal proportional counter after chemical separation.

Other potential pathways for releasing radioactive particulates are periodically monitored by collecting samples using particulate filters and analyzing these filters with a germanium detector.

B. Liquid Effluents

1. Batch Releases

Each tank of liquid radwaste is analyzed for principal gamma emitters using a germanium detector prior to release. The pre-release analysis includes dissolved and entrained gases. Volume proportional monthly and quarterly composites are prepared from aliquots of each tank released. The monthly composite is analyzed for tritium using a liquid scintillation spectrometer, gross alpha radioactivity using an internal proportional counter and phosphorous-32 using an internal proportional counter following chemical separation. The quarterly composite is analyzed for iron-55 using thin sodium iodide detector and for strontium-89 and 90 using an internal proportional detector following chemical separations.

2. Continuous releases

For the continuous liquid releases of steam generator blowdown tank and turbine building sump oily water separator, daily grab samples are collected and volume proportioned for weekly, monthly and quarterly composites. The oily water separator weekly composite is analyzed for gross gamma and principal gamma emitters using a germanium detector. The steam generator blowdown tank weekly composite is analyzed for principal gamma emitters and iodine 131. The steam generator blowdown tank monthly composite is analyzed for tritium using a liquid scintillation spectrometer, for gross alpha using an internal proportional counter and for phosphorous-32 using an internal proportional counter following chemical separation. The steam generator blowdown tank quarterly composite is analyzed for iron-55 using a thin sodium iodide detector and for strontium-89 and 90 using an internal proportional counter following chemical separations. The results for each of the composites is averaged over the period of the composite. In addition, one grab sample of the steam generator blowdown tank is analyzed monthly for dissolved and entrained gases using a germanium detector. The results of this analysis are assumed to remain constant over the period of one month.

IV Batch Releases

A. Liquid

1. Number of batch releases..... 200
2. Total time period for batch releases..... 875.2 hours
3. Maximum time period for a batch release..... 12 hours
4. Average time period for a batch release..... 4.4 hours
5. Minimum time period for a batch release..... 0.38 hours
6. Average saltwater flow during batch releases..... 7.60 E5 GPM

B. Gaseous

1. Number of batch releases..... 34
2. Total time period for batch releases..... 135.8 hours
3. Maximum time period for a batch release..... 24.0 hours
4. Average time period for a batch release..... 3.99 hours
5. Minimum time period for a batch release..... 0.017 hours

V Abnormal Releases

There were no abnormal releases during this reporting period.

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TABLE 1

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	3rd Quarter	4th Quarter	Est. Total Error,%
A. Fission & activation gases				
1. Total release	Ci	LLD	5.86 E-2	5.0 E1
2. Average release rate for period	µCi/sec	LLD	7.37 E-3	
3. Percent of technical specification limit	%	0.0	5.05 E-5	
B. Iodines				
1. Total iodine-131	Ci	LLD	LLD	2.3 E1
2. Average release rate for period	µCi/sec	LLD	LLD	
3. Percent of technical specification limit	%	0.0	0.0	
C. Particulates				
1. Particulates with half-lives > 8 days	Ci	LLD	1.20 E-5	2.3 E1
2. Average release rate for period	µCi/sec	LLD	1.51 E-6	
3. Percent of technical specification limit	%	0.0	8.97 E-4	
4. Gross alpha radioactivity	Ci	LLD	LLD	
D. Tritium				
1. Total release	Ci	7.35 E-5	1.30 E-2	1.2 E1
2. Average release rate for period	µCi/sec	9.24 E-6	1.64 E-3	
3. Percent of technical specification limit	%	1.65 E-8	2.93 E-6	

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TABLE 2

GASEOUS EFFLUENTS - GROUND-LEVEL RELEASES

Nuclides Released	Unit	3RD QUARTER		4TH QUARTER	
		CONTINUOUS MODE	BATCH MODE	CONTINUOUS MODE	BATCH MODE
1. Fission gases					
krypton-85	Ci	LLD	LLD	LLD	LLD
krypton-85m	Ci	LLD	LLD	LLD	LLD
krypton-87	Ci	LLD	LLD	LLD	LLD
krypton-88	Ci	LLD	LLD	LLD	LLD
xenon-133	Ci	LLD	LLD	LLD	LLD
xenon-133m	Ci	LLD	LLD	LLD	LLD
xenon-135	Ci	LLD	LLD	LLD	LLD
xenon-135m	Ci	LLD	LLD	LLD	LLD
xenon-138	Ci	LLD	LLD	LLD	LLD
argon-41	Ci	LLD	LLD	LLD	5.86 E-2
TOTAL FOR PERIOD	Ci	0	0	0	5.86 E-2
2. Iodines					
iodine-131	Ci	LLD		LLD	
iodine-133	Ci	LLD		LLD	
iodine-135	Ci	LLD		LLD	
TOTAL FOR PERIOD	Ci	0		0	

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TABLE 2 (CONTINUED)

GASEOUS EFFLUENTS - GROUND-LEVEL RELEASES

Nuclides Released	Unit	CONTINUOUS MODE	
		3rd Quarter	4th Quarter
3. Particulates			
cerium-141	Ci	LLD	LLD
cerium-144	Ci	LLD	LLD
cesium-134	Ci	LLD	LLD
cesium-137	Ci	LLD	LLD
cobalt-58	Ci	LLD	LLD
cobalt-60	Ci	LLD	LLD
iron-59	Ci	LLD	LLD
manganese-54	Ci	LLD	LLD
molybdenum-99[1]	Ci	LLD	LLD
strontium-89	Ci	LLD	7.86 E-6
strontium-90[1]	Ci	LLD	4.13 E-6
zinc-65	Ci	LLD	LLD
TOTAL FOR PERIOD	Ci	0	1.20 E-5

NOTES:

[1] Includes Daughters

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TABLE 3

GASEOUS EFFLUENTS - LOWER LIMITS OF DETECTION

Nuclide	Unit	Continuous Mode	Batch Mode	
1. Fission gases			Containment Purge	Gas Decay Tank
krypton-85	µCi/ml	2.29E-6	2.37E-6	3.37E-6
krypton-85m	µCi/ml	5.81E-9	8.08E-9	7.64E-6
krypton-87	µCi/ml	1.26E-8	3.20E-7	1.21E-5
krypton-88	µCi/ml	1.68E-8	4.59E-8	2.00E-5
xenon-133	µCi/ml	1.60E-8	2.21E-8	1.44E-5
xenon-133m	µCi/ml	2.83E-8	4.54E-8	4.92E-5
xenon-135	µCi/ml	4.09E-9	5.66E-9	3.28E-6
xenon-135m	µCi/ml	4.45E-8	7.99E-7	1.76E-5
xenon-138	µCi/ml	1.08E-7	2.79E-6	3.61E-5
argon-41	µCi/ml	1.62E-8	3.18E-8	1.54E-5
2. Tritium				
hydrogen-3	µCi/ml	3.52E-10	4.12E-10	
3. Iodines				
iodine-131	µCi/ml	5.06E-13		
iodine-133	µCi/ml	6.74E-13		
iodine-135	µCi/ml	5.37E-12		

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TABLE 3 (CONTINUED)

GASEOUS EFFLUENTS - LOWER LIMITS OF DETECTION

Nuclide	Unit	Continuous Mode
4. Particulates		
cerium-141	µCi/ml	4.43 E-13
cerium-144	µCi/ml	4.32 E-13
cesium-134	µCi/ml	5.60 E-13
cesium-137	µCi/ml	4.66 E-13
cobalt-58	µCi/ml	4.29 E-13
cobalt-60	µCi/ml	7.56 E-13
iron-59	µCi/ml	9.46 E-13
manganese-54	µCi/ml	4.27 E-13
molybdenum-99[1]	µCi/ml	3.39 E-12
strontium-89	µCi/ml	2.98 E-15
strontium-90[1]	µCi/ml	1.57 E-15
zinc-65	µCi/ml	1.24 E-12
gross alpha	µCi/ml	7.23E-15

Notes:

[1]Includes daughters

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TABLE 4

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	3rd Quarter	4th Quarter	Est Total Error, %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	3.51 E-3	7.61 E-3	2.1 E1
2. Average diluted concentration during period	µCi/ml	9.49 E-11	6.68-11	
3. Percent of applicable limit	%	1.25 E-4	5.06 E-4	
B. Tritium				
1. Total release	Ci	1.59 E-1	8.43 E-1	7.0 E0
2. Average diluted concentration during period	µCi/ml	4.29 E-9	7.40 E-9	
3. Percent of applicable limit	%	1.43 E-4	2.47 E-4	
C. Dissolved and entrained gases				
1. Total release	Ci	LLD	4.78 E-6	2.1 E1
2. Average diluted concentration during period	µCi/ml	LLD	4.19 E-14	
3. Percent of applicable limit	%	0	2.10 E-8	
D. Gross alpha radioactivity				
1. Total release	Ci	LLD	LLD	6.0 E1

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TABLE 4 (CONTINUED)

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	3rd Quarter	4th Quarter	Est Total Error, %
E. Volume of waste released (prior to dilution)	liters	3.04 E6	3.90 E6	5.0 E0
F. Volume of circulating saltwater used during release	liters	3.70 E10	1.14 E11	6.6 E0

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TABLE 5

LIQUID EFFLUENTS

Nuclides Released	Unit	3RD QUARTER		4TH QUARTER	
		CONTINUOUS MODE	BATCH MODE	CONTINUOUS MODE	BATCH MODE
antimony-124	Ci	LLD	2.33 E-5	LLD	LLD
cerium-141	Ci	LLD	LLD	LLD	LLD
cerium-144	Ci	LLD	LLD	LLD	LLD
cesium-134	Ci	LLD	LLD	LLD	LLD
cesium-137	Ci	LLD	LLD	LLD	1.01 E-7
chromium-51	Ci	LLD	1.47 E-4	LLD	2.53 E-4
cobalt-58	Ci	LLD	2.65 E-3	LLD	8.80 E-4
cobalt-60	Ci	LLD	4.76 E-4	LLD	2.69 E-4
iron-55	Ci	LLD	LLD	LLD	LLD
iron-59	Ci	LLD	2.43 E-5	LLD	1.26 E-5
manganese-54	Ci	LLD	1.32 E-4	LLD	9.24 E-5
molybdenum-99[1]	Ci	LLD	LLD	LLD	9.27 E-4
phosphorous-32	Ci	LLD	LLD	LLD	4.34 E-3
sodium-24	Ci	LLD	LLD	LLD	3.42 E-4
strontium-89	Ci	LLD	LLD	LLD	LLD
strontium-90[1]	Ci	LLD	LLD	LLD	LLD
tungsten-187	Ci	LLD	LLD	LLD	3.25 E-4
zirconium-95[1]	Ci	LLD	5.43 E-5	LLD	4.12 E-5
zinc-65	Ci	LLD	LLD	LLD	6.17 E-6
TOTAL FOR PERIOD	Ci	0	3.51 E-3	0	7.49 E-3

NOTES:

[1]Includes daughters

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TABLE 5 (CONTINUED)

LIQUID EFFLUENTS

Nuclides Released	Unit	3RD QUARTER CONTINUOUS MODE	3RD QUARTER BATCH MODE	4TH QUARTER CONTINUOUS MODE	4TH QUARTER BATCH MODE
iodine-131	Ci	LLD	LLD	LLD	3.15 E-5
iodine-133	Ci	LLD	LLD	LLD	8.64 E-5
xenon-133	Ci	LLD	LLD	LLD	LLD
xenon-135	Ci	LLD	LLD	LLD	4.78 E-6

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TABLE 6

LIQUID EFFLUENTS - LOWER LIMITS OF DETECTION

Nuclide	Unit	Continuous Mode	Batch Mode
antimony-124	µCi/ml	N/A[2]	3.80 E-8
cerium-141	µCi/ml	2.31 E-8	3.46 E-8
cerium-144	µCi/ml	9.84 E-8	1.45 E-7
cesium-134	µCi/ml	1.82 E-8	2.82 E-8
cesium-137	µCi/ml	1.26 E-8	2.46 E-8
chromium-51	µCi/ml	9.71 E-8	1.88 E-7
cobalt-58	µCi/ml	1.80 E-8	2.81 E-8
cobalt-60	µCi/ml	7.14 E-8	3.31 E-8
iron-55	µCi/ml	6.00 E-7	2.60 E-7
iron-59	µCi/ml	3.34 E-8	4.69 E-8
manganese-54	µCi/ml	1.50 E-8	2.64 E-8
molybdenum-99[1]	µCi/ml	1.11 E-7	1.70 E-7
phosphorous-32	µCi/ml	1.84 E-7	4.16 E-7
sodium-24	µCi/ml	3.15 E-8	4.56 E-8
strontium-89	µCi/ml	2.82 E-8	7.13 E-9
strontium-90[1]	µCi/ml	8.69 E-9	1.63 E-8
tungsten-187	µCi/ml	6.14 E-8	1.94 E-7
zirconium-95[1]	µCi/ml	2.77 E-8	3.86 E-8
zinc-65	µCi/ml	3.60 E-8	5.20 E-8
gross alpha	µCi/ml	8.03 E-8	7.36 E-8

NOTES:

[1]Includes Daughters

[2]This is a nuclide not routinely checked for LLD

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TABLE 6 (CONTINUED)

LIQUID EFFLUENTS - LOWER LIMITS OF DETECTION

Nuclide	Unit	Continuous Mode	Batch Mode
iodine-131	µCi/ml	1.17 E-8	2.76 E-8
iodine-133	µCi/ml	1.94 E-8	6.44 E-8
xenon-133	µCi/ml	6.28 E-8	5.55 E-8
xenon-135	µCi/ml	1.45 E-8	1.63 E-8

PART TWO

SOLID RADWASTE SHIPMENTS

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SOLID WASTE AND IRRADIATED FUEL SHIPMENT

A. Solid Waste Shipped Offsite for Burial or Disposal (Not irradiated fuel)

1. Type of Waste	Unit	6-Month Period	Est. Total Error, %
a. Spent Resins	m^3 Ci	0.00E+0 0.00E+0	N/A
b. Dry Compressible Waste, Contaminated Equip. Etc.	m^3 Ci	0.00E+0 0.00E+0	N/A
c. Irradiated Components, Control Rods, Etc.	m^3 Ci	0.00E+0 0.00E+0	N/A
d. Absorbed liquids, Sand, Building Rubble, Biological Waste	m^3 Ci	0.00E+0 0.00E+0	N/A

2. Estimate of Major Nuclide Composition (by type of waste)

a.

NOT APPLICABLE	%	0.00+0

b.

NOT APPLICABLE	%	0.00+0

c.

NOT APPLICABLE	%	0.00E+0

d.

NOT APPLICABLE	%	0.00E+0

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SOLID WASTE AND IRRADIATED FUEL SHIPMENT

A. Solid Waste Shipped Offsite for Burial or Disposal (Not irradiated fuel) (Continued)

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
NONE	N/A	N/A

B. Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination
NONE	N/A	N/A

PART THREE

RADIATION DOSE DUE TO GASEOUS AND LIQUID EFFLUENTS

RADIATION DOSES

I. Radiation doses due to radioactive liquid effluents

The radiation dose contributions due to releases of radioactive liquid effluents to the total body and each individual organ for the maximum exposed adult have been calculated in accordance with the methodology in the Offsite Dose Calculation Procedure. These dose contributions are listed in Table 7.

II. Radiation doses due to radioactive gaseous effluents

The radiation dose contributions due to radioactive gaseous effluents at the site boundary for the land sectors have been calculated in accordance with the calculated methodology in the Offsite Dose Calculation Procedure. The meteorology concurrent with the time of discharge were used in these calculations. In addition to the site boundary doses, the dose to an individual at the nearest residence within the low population zone for each of the land sectors and a five mile infant milk dose in each of the land sectors is included. These dose contributions are listed in Table 8 for the third and fourth quarters and the annual total. There were no measurable releases of radioactivity in gaseous effluents during the second quarter.

III. Radiation dose to individuals within the site boundary due to the release of liquid and gaseous effluents.

a. Liquid effluents

The radiation dose to individuals within the site boundary due to the release of radioactive liquid effluents is negligible. This is because the discharge piping for liquid radwaste is mostly buried in concrete walls, is located in remote or inaccessible areas or is underground. In addition, the quantity of radioactivity released was very low during 1984.

b. Gaseous Effluents

The maximum radiation dose to individuals within the site boundary due to the release of radioactive gaseous effluents is evaluated to be 2E-3mrem during 1984. This dose is to an individual at the plant overlook located 250 meters from the Unit 1 plant vent in the northeast sector. It was assumed that an individual was present at the overlook at the time the containment discharges occurred with winds in this direction.

IV. 40 CFR 190 Considerations

The releases of radioactivity in liquid and gaseous effluents during 1984 resulted in doses that are small percentages of the technical specification limits as shown in Tables 9 and 10. This coupled with the fact that there are no other uranium fuel cycle sources within eight kilometers of the Diablo Canyon Nuclear Power Plant shows conformance with 40 CFR 190.

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TABLE 7

RADIATION DOSE DUE TO THE RELEASE OF RADIOACTIVE LIQUID EFFLUENTS

ORGAN	DOSE millirem			
	2nd Quarter[1]	3rd Quarter	4th Quarter	Annual Total
Total Body	1.41 E-6	1.38 E-5	2.58 E-3	2.60 E-3
Bone	0	3.66 E-6	6.68 E-2	6.68 E-2
Liver	1.02 E-6	1.50 E-5	4.16 E-3	4.18 E-3
Thyroid	1.42 E-14	8.45 E-8	4.69 E-6	4.77 E-6
Kidney	1.38 E-7	6.02 E-7	2.58 E-6	3.32 E-6
Lung	1.42 E-14	2.50 E-6	8.37 E-7	3.34 E-6
G. I. LLI	1.32 E-5	1.26 E-4	7.52 E-3	7.66 E-3

NOTES:

[1] Date of Unit 1 initial criticality was April 29, 1984

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TABLE 8

RADIATION DOSE DUE TO THE RELEASE OF RADIOACTIVE GASEOUS EFFLUENTS

THIRD QUARTER 1984

Sector[1] (Land only)		NW	NNW	N	NNE	NE	ENE	E	ESE	SE
Site Boundary (distance) meters		800	800	800	800	970	1175	1660	1750	1800
Noble Gas										
Gamma air dose	mrad	0	0	0	0	0	0	0	0	0
Beta air close	mrad	0	0	0	0	0	0	0	0	0
I,P,T[2]										
Adult[3]	mrem	0	0	0	0	0	0	0	1.40 E-7	0

Residence - direction, distance-miles		326°,3.7	333°,1.5	008°,4.4	018°,3.3	037°,5.1	062°,4.4	096°,4.5	2 mi[4]	N/A
Noble Gas										
Gamma air dose	mrad	0	0	0	0	0	0	0	0	N/A
Beta air dose	mrad	0	0	0	0	0	0	0	0	
I,P,T[2]										
Child[5]	mrem	0	0	0	0	0	0	0	2.07E-7[5]	

Five Mile Dairy										
I,P,T										
Infant	mrem	N/A	0	0	0	0	0	0	4.00 E-8	N/A

DIABLO CANYON NUCLEAR POWER PLANT

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 1984

TABLE 8 (Continued)

RADIATION DOSE DUE TO THE RELEASE OF RADIOACTIVE GASEOUS EFFLUENTS

FOURTH QUARTER 1984

Sector[1] (Land only)		NW	NNW	N	NNE	NE	ENE	E	ESE	SE
Site Boundary (distance) meters		800	800	800	800	970	1175	1660	1750	1800
Noble Gas										
Gamma air dose	mrad	1.48 E-4	5.25 E-5	0	0	1.02 E-3	0	0	1.13 E-5	0
Beta air close	mrad	5.20 E-5	1.85 E-5	0	0	3.58 E-4	0	0	3.96 E-6	0
I,P,T[2]										
Adult[3]	mrem	9.86 E-5	2.60 E-5	1.25 E-5	1.29 E-5	6.13 E-5	9.84 E-6	8.20 E-6	2.39 E-5	5.08 E-5
Residence - direction, distance-miles		326°,3.7	333°,1.5	008°,4.4	018°,3.3	037°,5.1	062°,4.4	096°,4.5	2 mi	N/A
Noble Gas										
Gamma air dose	mrad	6.04 E-6	2.06 E-5	0	0	2.69 E-5	0	0	2.22 E-6	
Beta air dose	mrad	2.12 E-6	7.23 E-6	0	0	9.49 E-6	0	0	7.82 E-7	
I,P,T[2]										
Adult[3]	mrem	4.20 E-6	5.89 E-6	8.13 E-7	1.12 E-6	1.88 E-6	1.21 E-6	1.25 E-6	2.98 E-45[5]	
Five Mile Dairy										
I,P,T[2]										
Infant	mrem	N/A	2.07 E-6	7.59 E-7	6.75 E-7	5.09 E-6	9.41 E-7	1.20 E-6	5.58 E-6	N/A

DIABLO CANYON NUCLEAR POWER PLANT

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 1984

TABLE 8 (Continued)

RADIATION DOSE DUE TO THE RELEASE OF RADIOACTIVE GASEOUS EFFLUENTS

1984 ANNUAL SUMMARY

Sector[1] (Land only)		NW	NNW	N	NNE	NE	ENE	E	ESE	SE
Site Boundary (distance) meters		800	800	800	800	970	1175	1660	1750	1800
Noble Gas										
Gamma air dose	mrad	1.48 E-4	5.25 E-5	0	0	1.02 E-3	0	0	1.13 E-5	0
Beta air close	mrad	5.20 E-5	1.85 E-5	0	0	3.58 E-4	0	0	3.96 E-6	0
I,P,T[2]										
Adult[3]	mrem	9.86 E-5	2.60 E-5	1.25 E-5	1.29 E-5	6.13 E-5	9.84 E-6	8.20 E-6	2.39 E-5	5.08 E-5
Residence - direction, distance-miles		326°;3.7	333°;1.5	008°;4.4	018°;3.3	037°;5.1	062°;4.4	096°;4.5	2 mi	N/A
Noble Gas										
Gamma air dose	mrad	6.04 E-6	2.06 E-5	0	0	2.69 E-5	0	0	2.22 E-6	
Beta air dose	mrad	2.12 E-6	7.23 E-6	0	0	9.49 E-6	0	0	7.82 E-7	
I,P,T[2]										
Adult[3]	mrem	4.20 E-6	5.89 E-6	8.13 E-7	1.12 E-6	1.88 E-6	1.21 E-6	1.25 E-6	2.98 E-4[5]	
Five Mile Dairy										
I,P,T[4]										
Infant	mrem	N/A	2.07 E-6	7.59 E-7	6.75 E-7	5.09 E-6	9.41 E-7	1.20 E-6	5.62 E-6	N/A

TABLE 8 (CONTINUED)

NOTES:

1. The ocean sectors SSE, S, SSW, SW, WSW, W, and WNW, are not included.

2. Radioiodines, Radioactive Material in Particulate Form and Radionuclides Other Than Noble Gases With Half-lives Greater Than Eight Days.

3. The inhalation, ground plane and animal-meat pathways are included in this dose calculation. The adult age group had the highest doses of the four age groups.

4. This location is a vegetable farm located throughout the ESE sector starting at 2 miles.

5. The inhalation, ground plane, animal-meat and vegetable pathways are included for this location. An occupancy factor of 0.5 was used for the inhalation and ground plane pathways. The child age group had the highest calculated dose for this location.

DIABLO CANYON NUCLEAR POWER PLANT

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 1984

TABLE 9

PERCENT OF TECHNICAL SPECIFICATION LIMITS FOR RADIOACTIVE LIQUID EFFLUENTS

ORGAN	PERCENT			
	2nd Quarter[1]	3rd Quarter	4th Quarter	Annual Total
Total Body	9.40 E-5	9.20 E-4	1.72 E-1	8.67 E-2
Bone	0	7.32 E-5	1.34 E-0	6.68 E-1
Liver	2.04 E-5	3.00 E-4	8.32 E-2	4.18 E-5
Thyroid	2.84 E-13	1.69 E-6	9.38 E-5	4.77 E-5
Kidney	2.76 E-6	1.20 E-5	5.16 E-5	3.32 E-5
Lung	2.84 E-13	5.00 E-5	1.67 E-5	3.34 E-5
G. I. LLI	2.64 E-4	2.52 E-3	1.50 E-1	7.66 E-2

NOTES:

[1] Date of Unit 1 initial criticality was April 29, 1984

DIABLO CANYON NUCLEAR POWER PLANT

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 1984

TABLE 10

PERCENT OF TECHNICAL SPECIFICATION LIMITS FOR RADIOACTIVE GASEOUS EFFLUENTS

	3rd Quarter		4th Quarter		Annual Total	
	Sector	% of T.S. Limit	Sector	% of T.S. Limit	Sector	% of T.S. Limit
Site Boundary						
Noble Gas						
gamma air dose		0	NE	2.04 E-4	NE	1.02 E-4
beta air dose		0	NE	3.58 E-5	NE	1.79 E-5
I,P,T						
adult	ESE	1.87 E-8	NW	1.32 E-5	NW	6.57 E-6
Residence						
Noble Gas						
gamma air dose		0	NE	5.38 E-6	NE	2.69 E-6
beta air dose		0	NE	9.49 E-7	NE	4.74 E-7
I,P,T						
child	ESE	2.76 E-8	ESE	3.97 E-5	ESE	1.99 E-5
Five Mile Dairy						
infant	ESE	5.33 E-9	ESE	7.44 E-7	ESE	3.75 E-7

PART 4

METEOROLOGICAL DATA

METEOROLOGICAL DATA

The hour-by-hour listing of wind speed, wind direction, atmospheric stability and precipitation is being submitted on magnetic tape in accordance with Technical Specification 6.9.1.9.

PACIFIC GAS AND ELECTRIC COMPANY

PG&E

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JAMES D. SHIFFER
VICE PRESIDENT
NUCLEAR POWER GENERATION

March 1, 1985

PGandE Letter No.: DCL-85-090

Mr. John B. Martin, Regional Administrator
U. S. Nuclear Regulatory Commission, Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

Re: Docket No. 50-275, OL-DPR-80
Diablo Canyon Unit 1
Semiannual Effluent Release Report

Dear Mr. Martin:

Enclosed is a copy of the Diablo Canyon Unit 1 Semiannual Radioactive Effluent Release Report for the second half of 1984 (Enclosure 1). The report describes the quantities of radioactive gaseous and liquid effluents released from the plant over the period of July 1, 1984 to December 31, 1984 and the solid radioactive waste shipments during the same period. Also enclosed is a magnetic tape of the annual summary of hourly site meteorological data (Enclosure 2).

The report is required by Section 6.9.1.8 of the Diablo Canyon Technical Specifications, and by 10 CFR 50.36a(a)(2).

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Sincerely,

for J. D. Shiffer

Enclosures

cc w/o enc. 2: California Department of Health Services
Radiological Health Section
R. W. Carr, Director
San Luis Obispo Air Pollution Control District
Director, Office of Inspection and Enforcement
Attn: Document Control Desk
Central Cost Regional Water Quality Control Board
Service List

1/1 IE-17

ENCLOSURE 1