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James D. Shiffer
Senior Vice President and
General Manager
Nuclear Power Generation

April 25, 1991

PG&E Letter No. DCL-91-098

U.S. Nuclear Regulatory Commission
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Re: Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Annual Radiological Environmental Operating Report

Gentlemen:

Enclosed is the 1990 Annual Radiological Environmental Operating Report for Diablo Canyon Units 1 and 2, submitted in accordance with Subsection 6.9.1.5 of the Technical Specifications, Appendix A to Facility Operating Licenses Nos. DPR-80 and DPR-82.

Sincerely,

J. D. Shiffer

cc: Ann P. Hodgdon (w/o enc.)
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Report Issued:

April 24, 1991

TES

1990 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT DIABLO CANYON POWER PLANT

Prepared by

Angeline Ong

April 1991

Report 420DC-91.324

.9104300415

Pacific Gas and Electric Company
Technical and Ecological Services
3400 Crow Canyon Road, San Ramon, California 94583

7022a/cap107

EXECUTIVE SUMMARY

This report contains results from the operational Radiological Environmental Monitoring Program for Diablo Canyon Power Plant (DCPP) compiled for the period January 1, 1990 through December 31, 1990. This program is conducted by the Health Physics Unit of Pacific Gas & Electric Company's Technical and Ecological Services (TES) in San Ramon, California, and is conducted in accordance with Section 3/4.12 of the DCPP Technical Specifications.

A review of the results from the 1990 Radiological Environmental Monitoring Program showed that all positively detected results were well below the reporting levels, and none of the lower limits of detection were exceeded. The airborne radioactivity concentrations around DCPP were consistent with preoperational background measurements. The mean percent availability for all air samplers was 99.5 percent for 1990. The ambient direct radiation levels in the environs surrounding DCPP did not change and were within the preoperational range. The analyses of water samples confirmed that the operation of DCPP had no impact on the aquatic medium in the plant environs. Vegetable crops harvested during their growing season and milk samples collected also showed no impact from plant operation. Some marine biological samples were found to contain plant-related nuclides. However, their activity concentrations were well below reporting levels and did not have any significant impact on the critical dose pathway to man.

The results of the 1990 Radiological Environmental Monitoring Program showed that the operation of DCPP had no significant radiological impact on the environment.

Prepared by:

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Health Physicist

Approved by:

Samuel L. Altshuler
Supervising Mechanical Engineer

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INTRODUCTION

Diablo Canyon Power Plant (DCPP) consists of two Westinghouse pressurized water reactors. Unit 1 (1086 MWe) attained criticality on April 29, 1984 and Unit 2 (1119 MWe) attained criticality on August 20, 1985. This report contains results from the operational Radiological Environmental Monitoring Program for DCPP compiled for the period January 1, 1990 through December 31, 1990. During this period, 1,722 environmental samples were collected and analyzed to determine radiation levels. They consisted of 71 terrestrial samples, 223 marine samples, 522 air particulate filters, 522 iodine cartridges, and 384 thermoluminescent dosimeter readings. The program is conducted by the Health Physics Unit of Pacific Gas & Electric Company's, Technical and Ecological Services (TES) in San Ramon, California. Also included in this report are the results of TES participation in the Environmental Protection Agency (EPA) cross-check program, the state cross-check program, and the current land use census of the plant environs.

DCPP ENVIRONMENTAL MONITORING PROGRAM

The Radiological Environmental Monitoring Program was conducted in accordance with Section 3/4.12 of the DCPP Technical Specifications. This program was designed to identify and quantify ambient radioactivity concentrations in the environs surrounding DCPP and to determine whether there were any significant increases in the concentration of radionuclides, attributable to plant operations, in the critical dose pathways.

The environmental media selected were based on the potential dose pathways of the radionuclides from the environment to man. They included the following: air, direct radiation, non-migratory marine species, algae, seawater, ocean bottom sediment, local agricultural crops, drinking water, surface water, and milk. The environmental samples were collected on a weekly, monthly, quarterly, or annual basis depending on sample type and availability. The frequencies of collection of the samples from the different media are summarized in Tables 1 and 2. These samples were collected by PG&E's Onsite Dosimetry and Environmental Services personnel, PG&E Mission Trail Region personnel, and contractors.

TABLE 1

MARINE SAMPLING PROGRAM

Sample Item	Sampling Location	Type of Analysis	Material Analyzed	Collection Frequency
Seawater	Diablo Cove Pacific Ocean North Pacific Ocean South Plant Outfall Rattlesnake Canyon	Gamma isotopic	Aliquot	Monthly
Red algae, foliose (*Iridaea* sp.)	Diablo Cove Rattlesnake Canyon	Gamma isotopic	Complete sample	Quarterly if available
Bull kelp (*Nereocystis leutkeana*)	Diablo Cove Pacific Ocean North Pacific Ocean South Rattlesnake Canyon	Gamma isotopic	Pneumatocyst and blade	Monthly if available
Mussels (*Mytilus californianus*)	Diablo Cove Pacific Ocean North Pacific Ocean South Rattlesnake Canyon	Gamma isotopic	Complete sample, less shell	Quarterly if available
Black abalone (*Haliotis cracherodii*)	Diablo Cove Pacific Ocean North Pacific Ocean South Rattlesnake Canyon	Gamma isotopic	Edible muscle	Quarterly if available
Surfperch (*Family Embiotocidae*)	Diablo Cove Pacific Ocean North Pacific Ocean South Rattlesnake Canyon	Gamma isotopic	Edible muscle	Quarterly if available

TABLE 1, continued

MARINE SAMPLING PROGRAM

Sample Item	Sampling Location	Type of Analysis	Material Analyzed	Collection Frequency
Red abalone (*Haliotis rufescens*)	Diablo Cove Pacific Ocean North Pacific Ocean South Rattlesnake Canyon	Gamma isotopic	Edible muscle	Quarterly if available
Rockfish (*Sebastes* sp.)	Diablo Cove Pacific Ocean North Pacific Ocean South Rattlesnake Canyon	Gamma isotopic	Edible muscle	Quarterly if available
Fish (species unspecified)	Commercial landing in Morro Bay* or Avila Pier*	Gamma isotopic	Edible muscle	Quarterly if caught locally**
Salmon (species unspecified)	Commercial landing in Morro Bay* or Avila Pier*	Gamma isotopic	Edible muscle	Quarterly if caught locally**

*Commercial sampling.
**Sampled when in season.

TABLE 2

DIRECT RADIATION, AIRBORNE, AND TERRESTRIAL SAMPLING PROGRAM

Sample Item	Sampling Locations[b/]	Type of Analysis	Collection Frequency
Direct radiation[a/]	32 stations	Gamma exposure	Quarterly
Airborne Particulates	8 stations	Gross beta, Gamma isotopic	Weekly[c/] Quarterly composite
Iodine	8 stations	Gamma for I-131	Weekly
Surface water	1 station[d/]	Gamma isotopic, tritium	Monthly
Vegetative greens	Farm in San Luis Obispo area; farm in Arroyo Grande area; farm along plant access road	Gamma isotopic (including I-131)	Monthly
Milk	Farm in San Luis Obispo area;	Gamma isotopic, radioiodine	Monthly
Drinking water	1 station	Gamma isotopic, radioiodine, tritium	Monthly

a/ Thermoluminescent dosimeters, three at each station.
b/ See Figures 1, and 2 for locations.
c/ Filters changed weekly or more frequently as required by dust loading; analyzed at least 24 hours after filter change.
d/ Diablo Creek above 500 kV switchyard.

The sampling locations were determined by land use, site meteorology, and local demographics. Indicator stations were selected as those stations with the potential to show effects of plant operations. Special interest stations were selected because of the importance of the dose pathway. Control stations were selected outside the influence of the plant. Table 3 below lists the indicator, special interest, and control stations for the different sample media:

TABLE 3

SAMPLING LOCATIONS*

Sampling Medium	Indicator Stations	Special Interest Stations	Control Stations
Airborne	MT1,ØS2,1S1,8S1,8S2,7D1,5F1		2F2
Direct Radiation	MT1,WN1,ØS1,5S1,6S1,8S1,8S2, 5S3,2D1,1A1,7C1,ØB1,4C1,ØS2, 1S1,2S1,3S1,4S1,7S1,1C1,5C1, 3D1,6D1,9S1	4D1,5F1, 7F1,7D1, 7D2,7G2, 5F3	2F2
Seawater	DCM	PON,POS	7C2
Surface Water	5S2		
Drinking Water	DW1		
Outfall Water	OUT		
Fish & Seafood	DCM,7D3,2F1	PON,POS	7C2
Algae	DCM	PON,POS	7C2
Sediment	DCM		
Food crops	7C1,7G1		5F2
Milk			5F2

* See Table 4 for station code.

The distances and directions to the environmental monitoring stations are listed on Table 4. The off-site and on-site stations are shown in Figures 1 and 2 respectively.

TABLE 4

DISTANCES AND DIRECTIONS TO ENVIRONMENTAL MONITORING STATIONS
(Stations are shown on Figures 1 and 2)

Station Code*	Station Name	Radial Direction (True Heading) (Degrees)	Radial Distance from Plant km (Miles)
ØS1	Exclusion Fence-Northwest Corner	320	0.2 (0.1)
ØS2	North Gate	320	.8 (0.5)
1S1	Wastewater Pond	330	.6 (0.4)
2S1	Back Road-300 m North of Plant	0	.3 (0.2)
3S1	Road NW of 230 kV Switchyard	23	.6 (0.4)
4S1	Back Road Between Switchyard	43	.8 (0.5)
5S1	400 kV Switchyard	58	.6 (0.4)
5S2	Diablo Creek Weir	65	1.0 (0.6)
5S3	Microwave Tower Road	70	1.0 (0.6)
6S1	Microwave Tower	94	.8 (0.5)
7S1	Overlook Road	112	0.5 (0.3)
8S1	Target Range	125	.8 (0.5)
8S2	Southwest Site Boundary (Sec. Met Tower)	128	1.8 (1.1)
9S1	South Cove	167	.6 (0.4)
MT1	Meteorological Tower	185	.3 (0.2)
DCM	Diablo Cove	270	.3 (0.2)
WN1	Northwest Guard Shack	290	.3 (0.2)
1A1	Crowbar Canyon	327	2.6 (1.6)
ØB1	Point Buchon	325	5.8 (3.6)
1C1	Montana de Oro Campground	336	7.5 (4.7)
4C1	Clark Valley Gravel Pit	45	9.3 (5.8)
5C1	Junction Prefumo/See Canyon Roads	64	7.5 (4.7)
7C1	Pecho Creek Ruins (Mello Farm)	120	6.6 (4.1)
7C2	Rattlesnake Canyon	124	7.5 (4.7)
2D1	Sunnyside School	10	11.0 (6.9)
3D1	Clark Valley	24	9.9 (6.2)
4D1	Los Osos School	36	12.2 (7.6)
6D1	Junction See/Davis Canyon Roads	89	12.0 (7.5)
7D1	Avila Gate	118	10.6 (6.6)
7D2	Avila Beach	110	12.2 (7.6)
7D3	Avila Pier	120	11.0 (6.9)
2F1	Morro Bay (Commercial Landing)	0	17.4 (10.9)
2F2	Morro Bay Power Plant	358	17.9 (11.2)
5F1	SLO Zone 1 Substation	68	17.9 (11.2)
5F2	Cal Poly Farm	60	20.2 (12.6)
5F3	SLO County Health Department	70	20.3 (12.7)
7F1	Shell Beach	110	17.3 (10.8)
7G1	Arroyo Grande (Kawaoka Farm)	115	26.9 (16.8)
7G2	Oceano Substation	118	27.7 (17.3)

TABLE 4 - continued

DISTANCES AND DIRECTIONS TO ENVIRONMENTAL MONITORING STATIONS
(Stations are shown on Figures 1 and 2)

Station Code*	Station Name	Radial Direction (True Heading) (Degrees)	Radial Distance from Plant km (Miles)
OUT	Plant Outfall	270	0.3 (0.2)
DW1	Drinking Water	In Plant	---
PON	Pacific Ocean North of Diablo Cove	305	2.4 (1.5)
POS	Pacific Ocean South of Diablo Cove	145	1.3 (0.8)

*Station Code (XYZ):

X - First number (0-9) represents the radial sector in which the station is located:

0 - Northwest
1 - North-northwest
2 - North
3 - North-northeast
4 - Northeast
5 - East-northeast
6 - East
7 - East-southeast
8 - Southeast
9 - South-southeast

Y - Letter (S, A-H) represents the distance from the plant:

S - On-site
A - 0-2 miles from plant (but off-site)
B - 2-4 miles from plant
C - 4-6 miles from plant
D - 6-8 miles from plant
E - 8-10 miles from plant
F - 10-15 miles from plant
G - 15-20 miles from plant
H - Greater than 20 miles from plant

Z - Second number represents the station number within the zone.

*Station Code (DCM, MT1, WN1, PON, POS, OUT, DW1):

The following stations do not follow the coding system: Diablo Cove Marine (DCM), Meteorological Tower (MT1), Northwest guard shack (WN1), Pacific Ocean North (PON), Pacific Ocean South (POS), Plant Outfall (OUT), and Drinking Water (DW1).

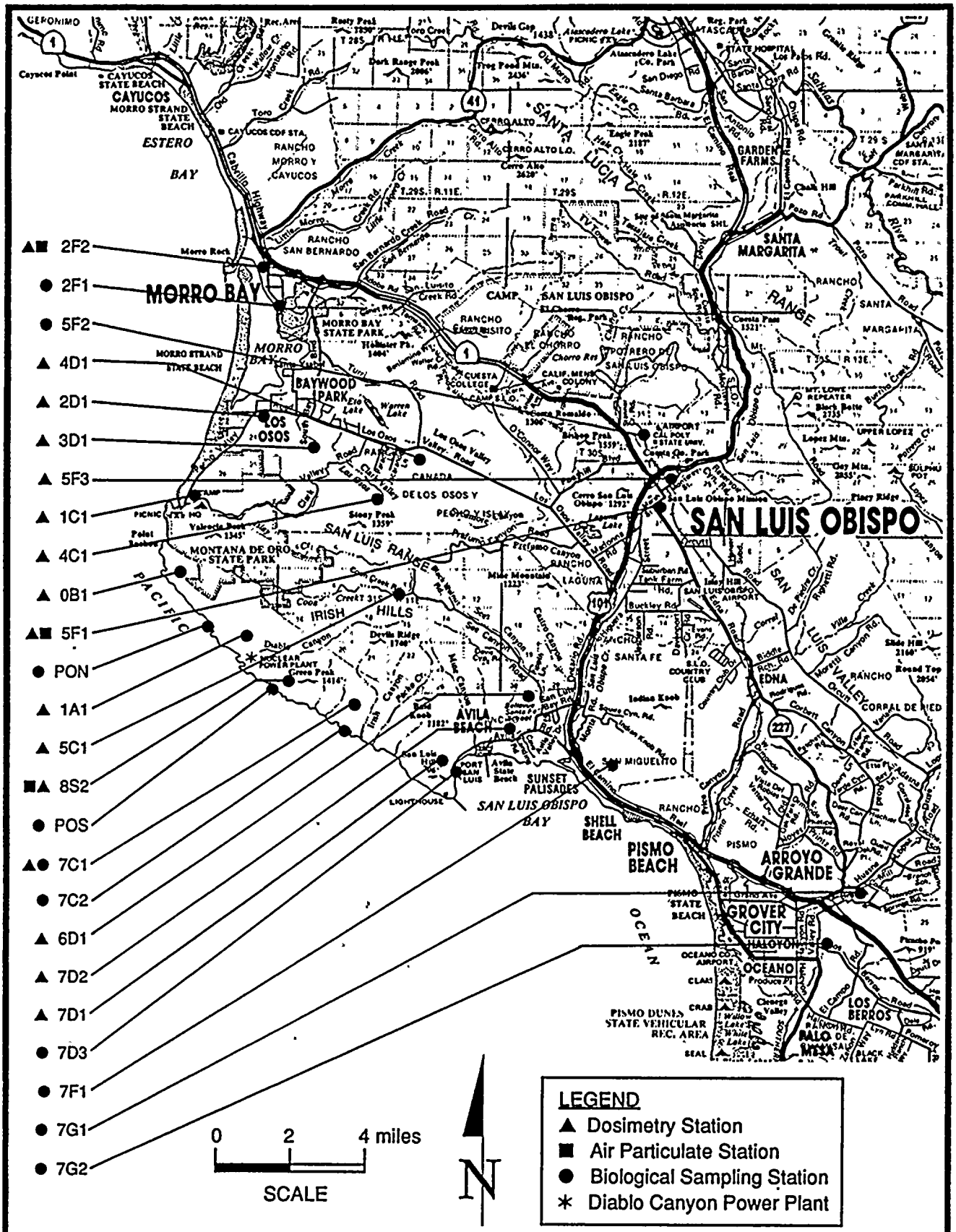


Figure 1. Units 1 and 2 Diablo Canyon off-site stations.

91-3-173/T156

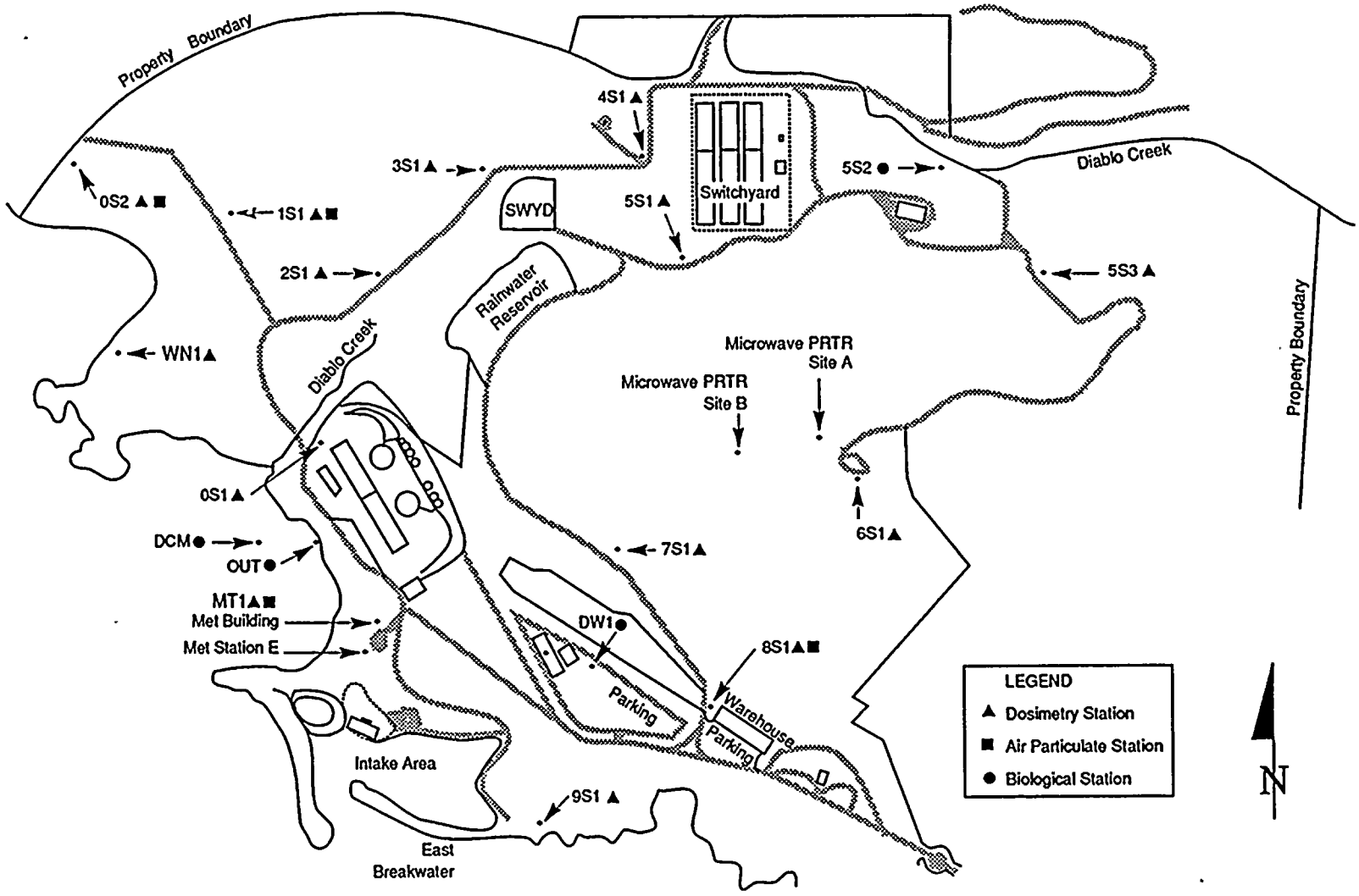


Figure 2. Units 1 and 2 Diablo Canyon on-site stations.

SAMPLING METHODS

AIRBORNE RADIOACTIVITY

Air particulate and radioiodine sampling were performed weekly. Constant flow air samplers were used to draw air through paper filters to collect air particulates and through TEDA impregnated charcoal cartridges to collect radioiodine. The air samplers were set at a flow rate of 1.5 cfm and located one meter above the ground.

At the end of the sampling period, the filter and cartridge were collected. All necessary data regarding the flow rate, run time, sampler time on and off, date of collection, and sampler location were recorded and submitted, along with the samples, to TES for analysis.

DIRECT RADIATION

Direct radiation was measured at 32 stations in the vicinity of Diablo Canyon using Panasonic UD814 thermoluminescent dosimeters (TLDs), and these TLDs were exchanged on a quarterly basis.

The field TLD packets were prepared by PG&E's Onsite Dosimetry and Environmental Services personnel. Control dosimeters were carried with the field dosimeters to differentiate the exposure the dosimeters received in the field from that which they received during transit. The location, date, and time of exchange were recorded on the log sheet which accompanied the field dosimeters.

WATER SAMPLES

Water samples (seawater, drinking water, surface water, and outfall water) were collected monthly. Two 1-gallon plastic bottles of each water sample type were collected at their respective locations.

Seawater samples were collected offshore at Diablo Cove (station DCM), station PON, station POS, and Rattlesnake Canyon (station 7C2). The outfall water samples were collected in the plant outfall. Surface water samples were collected from Diablo Creek Weir (station 5S2) located on site at DCPP. Drinking water samples were collected from the drinking water system on site.

Before collection, the plastic bottles were rinsed with the water to be collected. After collection, the samples were securely sealed and labelled with sample type, location, date, time of collection, and the person performing the collection. The samples were then sent to TES for analysis.

MARINE SAMPLES

Marine samples collected included, but were not limited to, the following: iridaea, bull kelp, red and black abalone, California mussels, rockfish, surfperch, commercial fish, and ocean bottom sediment. The intertidal samples (iridaea, mussels, and black abalone) were collected quarterly when the tide was at its lowest level during the quarter. Bull kelp was collected monthly from the offshore kelp bed near the plant. Quarterly samples of fish, red abalone, and an annual sample of ocean bottom sediment were collected from the waters near the plant by divers. Fish caught offshore and available commercially were also obtained for analysis. All samples were subject to unavailability due to seasonal fluctuations or unfavorable sampling conditions.

The samples were sealed in plastic bags immediately upon collection and labelled with sample type, location, date, time of collection, and individual performing the collection before they were sent to TES.

FOOD CROPS

Representative samples of vegetable crops in season were collected monthly from Cal Poly Farm (station 5F2), Kawaoka Farm in Arroyo Grande (station 7G1), and Mello Farm (station 7C1) along the site access road. The samples were harvested by the individual performing the collection, sealed immediately in polyethylene bags, labelled with sample type, sample location, collection date, time of collection, and the individual performing the collection, and then sent to TES for analysis.

MILK

Milk was collected monthly from Cal Poly Farm (station 5F2). Two 1-gallon plastic bottles of milk were collected from each dairy. Forty grams of sodium bisulfite preservative were added to each milk sample. The bottles

were sealed and shaken thoroughly to distribute the preservative. They were labelled with sample type, sample location, date and time of collection, and the individual performing the collection, and then sent to TES for analysis.

SAMPLE ANALYSES

Samples received at TES were analyzed for radioactivity by standard methods as outlined in the environmental monitoring procedures for DCPP[1]. The results of the analyses were reported at the 95 percent confidence level (2σ). All analyses were performed such that the lower limits of detection (LLDs) listed on Table 5 were achieved under routine conditions. The LLD is an a priori (before the fact) estimate of the activity concentration that can be practically achievable with a given measuring instrument, procedure, and type of sample. This value is not intended to be used as an a posteriori (after the fact) criterion for the presence of activity. Background fluctuation, unavoidably small sample size, the presence of interfering nuclides or other uncontrollable circumstances may occasionally render these LLDs unachievable. In such cases the contributing factors are identified and described in this report.

A brief description of the analyses of the different sample types and the general method of counting is discussed below. For quick reference, Tables 1 and 2 summarize the type of analyses that were done on the different sample media.

AIRBORNE RADIOACTIVITY

The filter papers collected from the field were placed on individual planchets and counted for gross beta activity in a low-background, thin-window gas proportional counter. They were counted at least 24 hours after collection to allow for the decay of radon daughters. Gamma isotopic analysis was then performed on quarterly composites of the filters to determine the activity concentration of gamma emitting isotopes.

Gamma isotopic analyses were also performed on the TEDA impregnated charcoal cartridges to determine the radioiodine concentration. The cartridges and filter papers were counted for a time period such that the LLDs were met.

DIRECT RADIATION

Panasonic (UD814) thermoluminescent dosimeters were used to measure the ambient radiation level. The dosimeters were annealed and packaged to be

TABLE 5

MAXIMUM VALUES FOR THE LOWER LIMITS OF DETECTION (LLD)[a/]

Analysis	Water (pCi/L)	Airborne Particulate or Gas (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/L)	Food Products (pCi/kg, wet)	Sediment (pCi/kg, dry)
Gross beta	4	1×10^{-2}				
H-3	2000					
Mn-54	15		130			
Fe-59	30		260			
Co-58,60	15		130			
Zn-65	30		260			
Zr-Nb-95	15					
I-131	1[b/]	7×10^{-2}		1	60	
Cs-134	15	5×10^{-2}	130	15	60	150
Cs-137	18	6×10^{-2}	150	18	80	180
Ba-La-140	15			15		

Table Notation

a/ The LLD is the smallest concentration of radioactive material in a sample that will be detected with 95 percent probability with 5 percent probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66\ s_b}{E \times V \times 2.22 \times Y \times \exp(-\lambda t)}$$

TABLE 5, continued

MAXIMUM VALUES FOR THE LOWER LIMITS OF DETECTION (LLD)[a/]

where

LLD is the lower limit of detection as defined (as pCi per unit mass or volume)

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute)

E is the counting efficiency (as counts per transformation)

V is the sample size (in units of mass or volume)

2.22 is the number of transformations per minute per picocurie

Y is the fractional radiochemical yield (when applicable)

λ is the radioactive decay constant for the particular radionuclide

t is the elapsed time between sample collection (or end of the sample collection period) and time of counting

The value of s_b used in the calculation of the LLD for a detection system shall be based on the actual observed variance of the background counting rate or of the counting rate of the blank samples (as appropriate) rather than on an unverified theoretically predicted variance. In calculating the LLD for a radionuclide determined by gamma ray spectrometry, the background shall include the typical contributions of other radionuclides normally present in the samples (e.g., potassium-40 in milk samples).

b/ LLD for drinking water.

sent out in the field. After field exposure, the TLDs were read out. The TLDs were calibrated using an NIST-traceable cesium-137 source.

WATER SAMPLES

Gamma isotopic analyses were performed on all water sample types (drinking water, surface water, outfall water, and seawater). To determine the activity concentration of gamma emitters, a known volume of the water sample was analyzed using a gamma spectrometer.

Tritium analyses were performed on drinking water, surface water and outfall water. The water samples were distilled prior to analysis, and analyzed for tritium using a liquid scintillation spectrometer.

MARINE SAMPLES

Only the edible portion of the fish, abalone, and mussels were analyzed for gamma emitters. A weighed amount of the prepared sample was analyzed using a gamma spectrometer.

The bull kelp blades and the pneumatocyst were prepared separately for analysis. The weighed samples were then counted on the gamma spectrometer to determine the activity concentration of gamma emitters. The results reported were based on wet weight for the marine samples.

The sediment sample that was collected from Diablo Cove was first oven dried before performing gamma isotopic analysis to determine the activity concentration. The results reported for the sediment sample were based on dry weight.

FOOD CROPS

Whenever possible, the leafy portions of the vegetative sample were prepared for analysis. The samples were analyzed to determine the gamma isotopic content, including iodine-131. The results obtained were based on wet weight.

MILK

A known volume of the milk sample was first analyzed on a gamma spectrometer to determine its gamma isotopic content. Stable iodine carrier was then added to the milk sample for determination of chemical recovery. The total iodine was separated from the sample by passing the sample through an anion resin column. The iodine was chemically extracted from the resin, precipitated as cuprous iodide and counted on the beta-gamma coincidence spectrometer.

QUALITY CONTROL

Routine quality control was performed throughout the year to ensure the accuracy of equipment and procedures used in determining the results. In addition to this, TES radiological laboratory participates in the EPA Environmental Radioactivity Laboratory Intercomparison Studies Program, the state cross-check program and PG&E's intracompany cross-check program.

Appendix A, Table A-11 presents the results of TES participation in the EPA Environmental Radiological Laboratory Intercomparison Studies Program. Participation included the following determinations:

- milk samples containing gamma emitters;
- water samples containing tritium, iodine-131, gamma emitters, strontium-89, strontium-90, alpha and beta emitters;
- air particulate samples containing cesium-137, strontium-90, alpha and beta emitters.

Three independent analyses were performed on each sample and the values were submitted for intercomparison with other participants. The 1990 results shown in Table A-11 were all within the acceptable range set by the EPA. Due to the unavailability of iodine-131 standard, the Iodine in Water Intercomparison Study for February 1990 was cancelled by EPA.

TES results for the intracompany cross-check program were found to be in good agreement with the other participants. No discrepancies were found.

The 1988 state cross-check report released in 1990 showed that results submitted by TES were comparable to those of the state of California's S&R Laboratory. No discrepancies were found. The 1989 cross-check report has not been issued yet. It will, therefore, be discussed in the 1991 annual report. Included in this report is the table of TES results submitted for the 1990 cross-check program (Appendix B, Table B-1).

LAND USE CENSUS

TES conducted a land use census in the vicinity of DCPP for 1990. The land use census is required by Nuclear Regulatory Commission (NRC), Regulatory Guide 4.8, "Environmental Technical Specifications for Nuclear Power Plants", and by the DCPP Technical Specification 3.12.2. The census is to be conducted at least once per year during the growing season, chosen as between June 1 and October 1, for the Diablo Canyon environs.

The objective of the land use census is to identify the nearest milk animal and the nearest garden greater than 50 square meters (500 square feet), producing broadleaf vegetation, in each of the landward meteorological sectors within a distance of 8 kilometers (5 miles) of the plant. In addition, the DCPP Technical Specifications require the identification of the nearest residence in each of the landward sectors within a distance of 5 miles.

The land use census was conducted by direct contact with individual landowners or tenants, and property visits. The landowners or tenants were identified from county records and were contacted between June 30 and September 30, 1990.

Contact with the landowners or tenants identified no household gardens greater than 50 square meters (500 square feet). No milk animals were identified within the first 5 miles in any sector. Much of the area surrounding the plant site is used for cattle grazing. The only garden or farm greater than 50 square meters is on the coastal plateau in the east southeast (ESE) sector, along the site access road. The farm starts at approximately 2 miles from the plant and extends to 4.5 miles from the plant. It produces mainly legumes and cereal grass (grains).

A total of seven permanent residences were identified within the 5-mile radius of the plant. The nearest residence is 1.55 miles north northwest (NNW) of the plant. Table B-5 summarizes the results of the land use census and Figure 3 shows the locations of the farm and residences in the vicinity of DCPP.

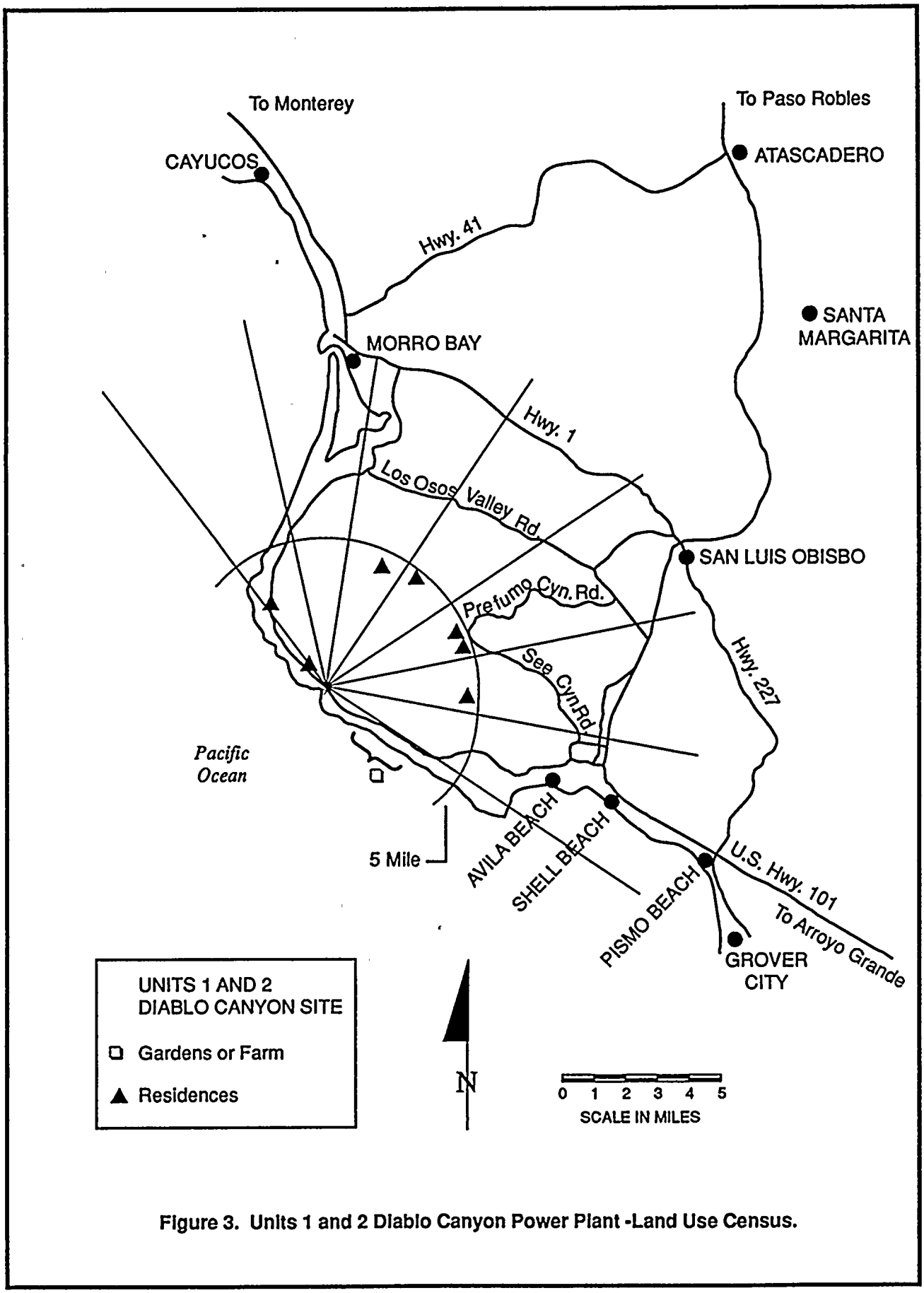


Figure 3. Units 1 and 2 Diablo Canyon Power Plant -Land Use Census.

91-3-173/TI56

RESULTS AND DISCUSSION

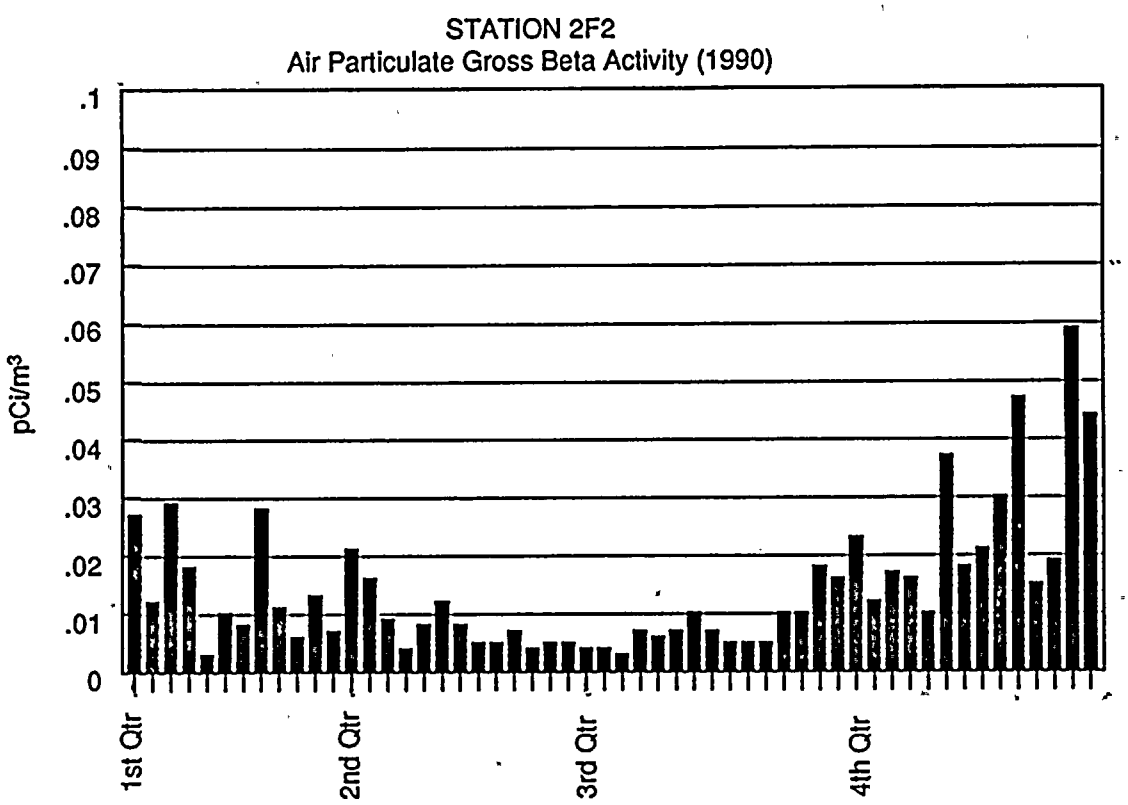
The results for the DCPP Radiological Environmental Monitoring Program are listed in Appendices A and B. The ± terms listed in the tables in the appendices are the 95 percent confidence level (2σ). The tables in Appendix A present summaries of the results, in accordance with current NRC guidelines[3], and the results of the EPA Laboratory Intercomparison Program. The tables in Appendix B contain analytical results of the individual samples performed in 1990 and state cross-check results.

The lower limits of detection for the radionuclides of interest listed in Table 5 were met for all analyses performed for the DCPP Radiological Environmental Monitoring Program. Analytical results for different sample types are discussed below.

AIRBORNE RADIOACTIVITY

Air particulates and radioiodine samples were collected weekly from seven indicator stations: MT1, ØS2, 1S1, 5F1, 7D1, 8S1, and 8S2 in the DCPP environs; and one control station, 2F2 (Morro Bay). A total of 522 air particulate filters and 522 iodine cartridges were collected and analyzed. Appendix A, Table A-2 summarizes the data collected for the air sampling program.

Air Particulates: Gross beta activity was detected in every weekly air particulate sample collected from all indicator and control stations. The range for the indicator stations was 0.002 - 0.044 pCi/m^3 with a mean of 0.014 pCi/m^3. The range for the control station was 0.003 - 0.059 pCi/m^3 with a mean of 0.012 pCi/m^3. Comparison of the data showed that the mean values of gross beta activities for the indicator stations were consistent with those obtained from the control station. The gross beta activities detected at the air sampling stations are tabulated in Appendix B, Table B-3 and shown in Figure 4. In the first quarter, at stations 5F1 and 7D1, the gross beta activities detected were below the norm because the filters were probably not centered properly in the holder. This affected the particulate loading on the filters and hence their gross beta activities.



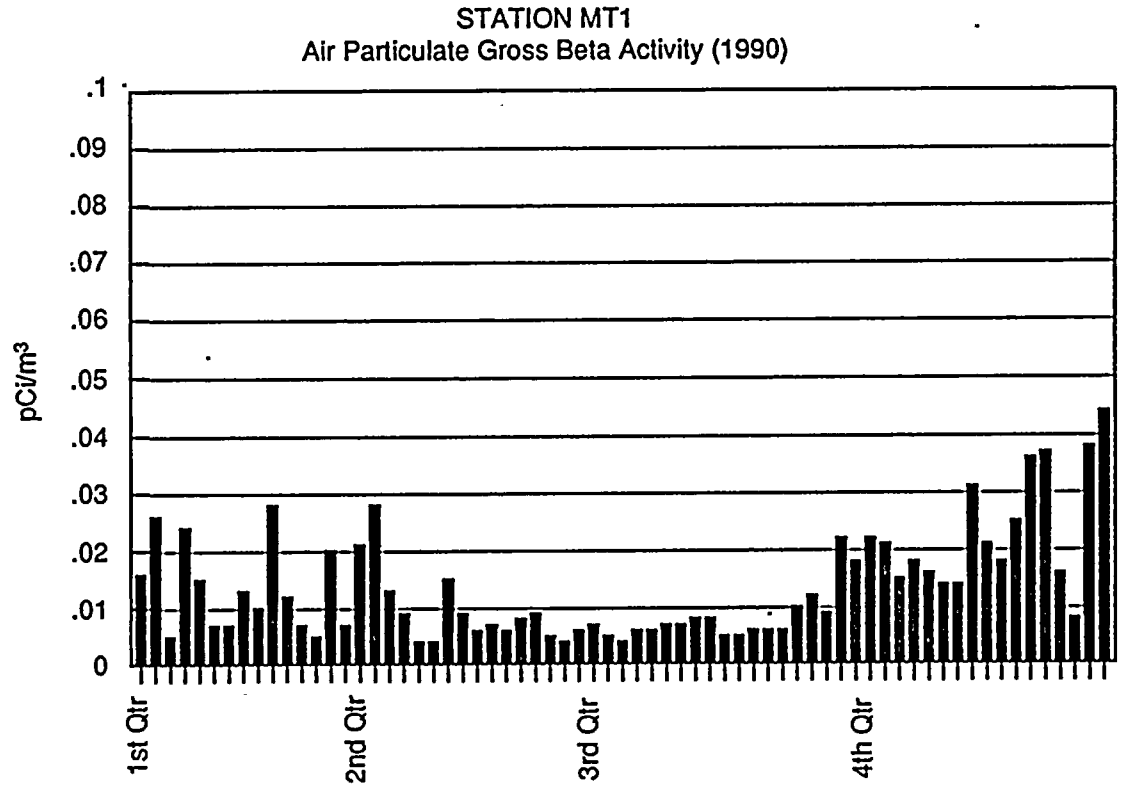


Figure 4. Air particulates gross beta activities.

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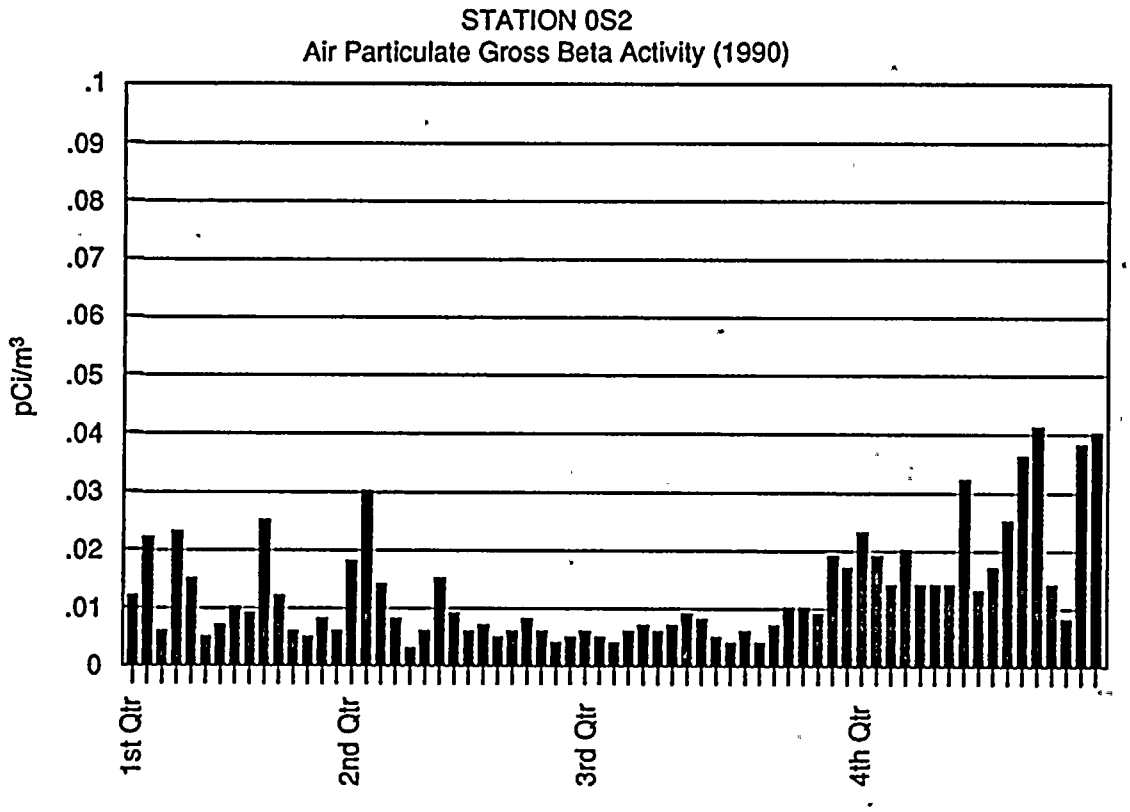

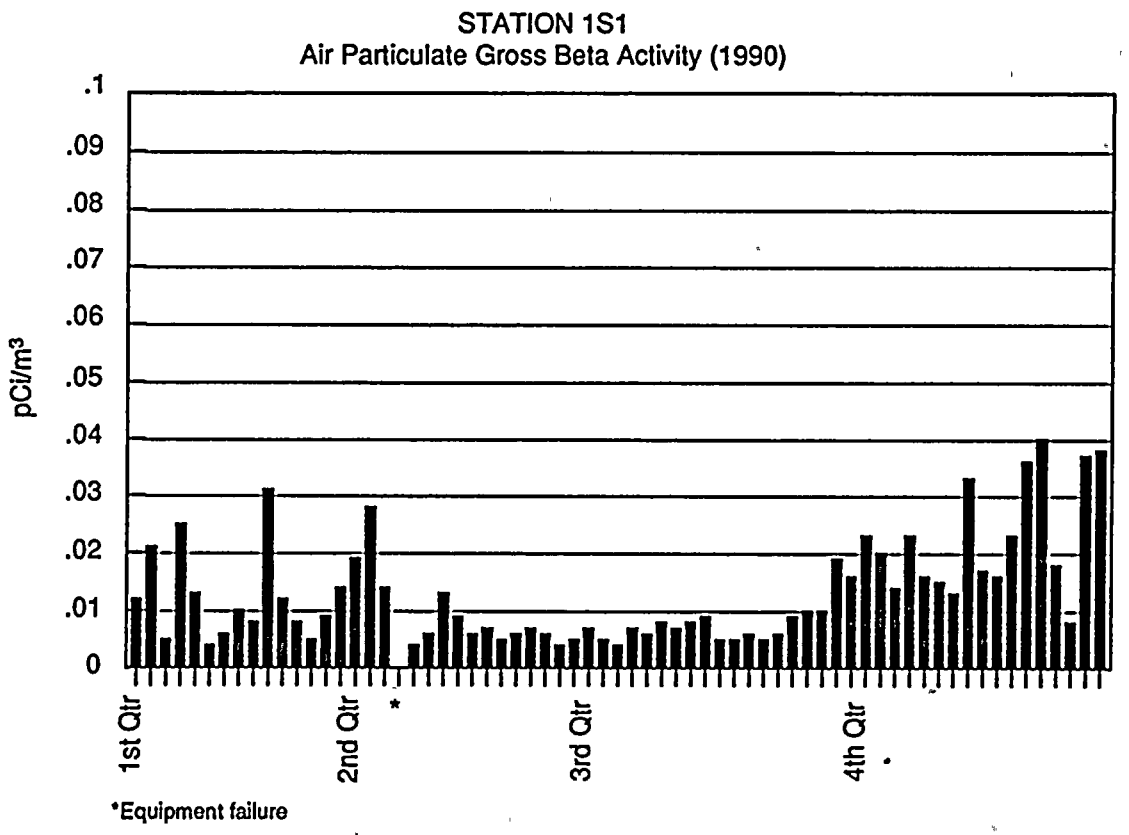

Figure 4. Continued.

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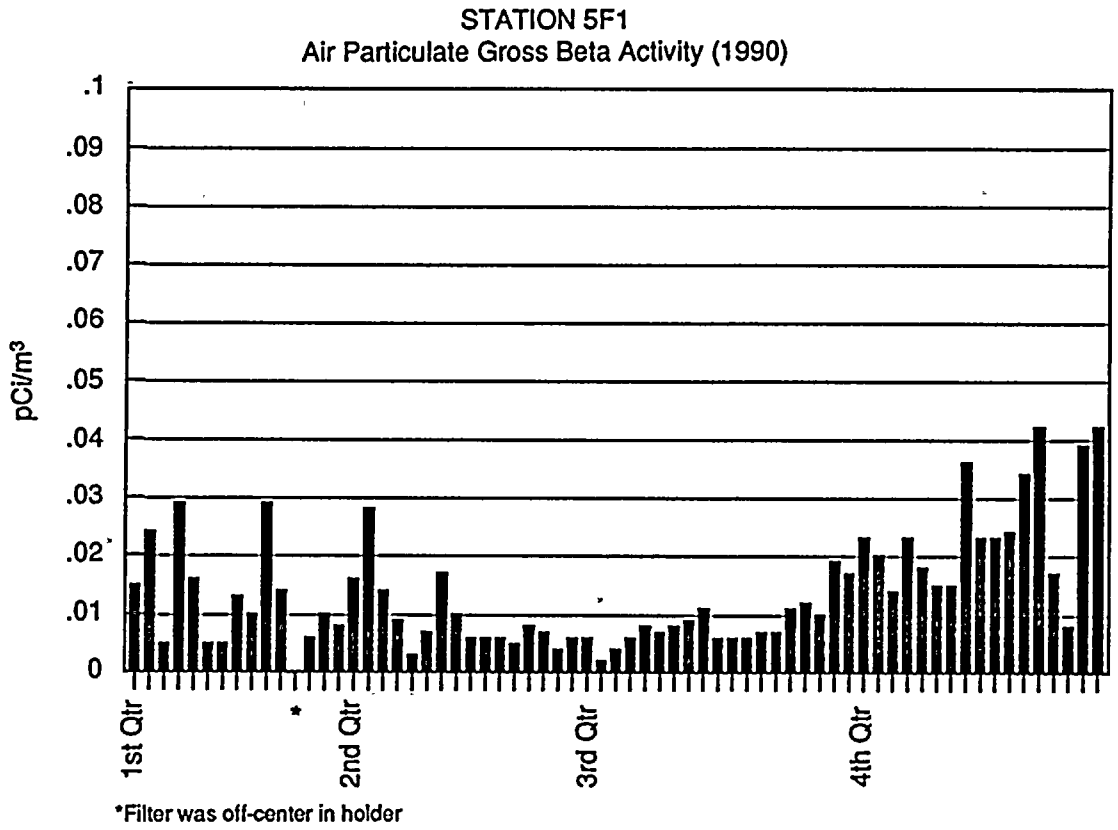

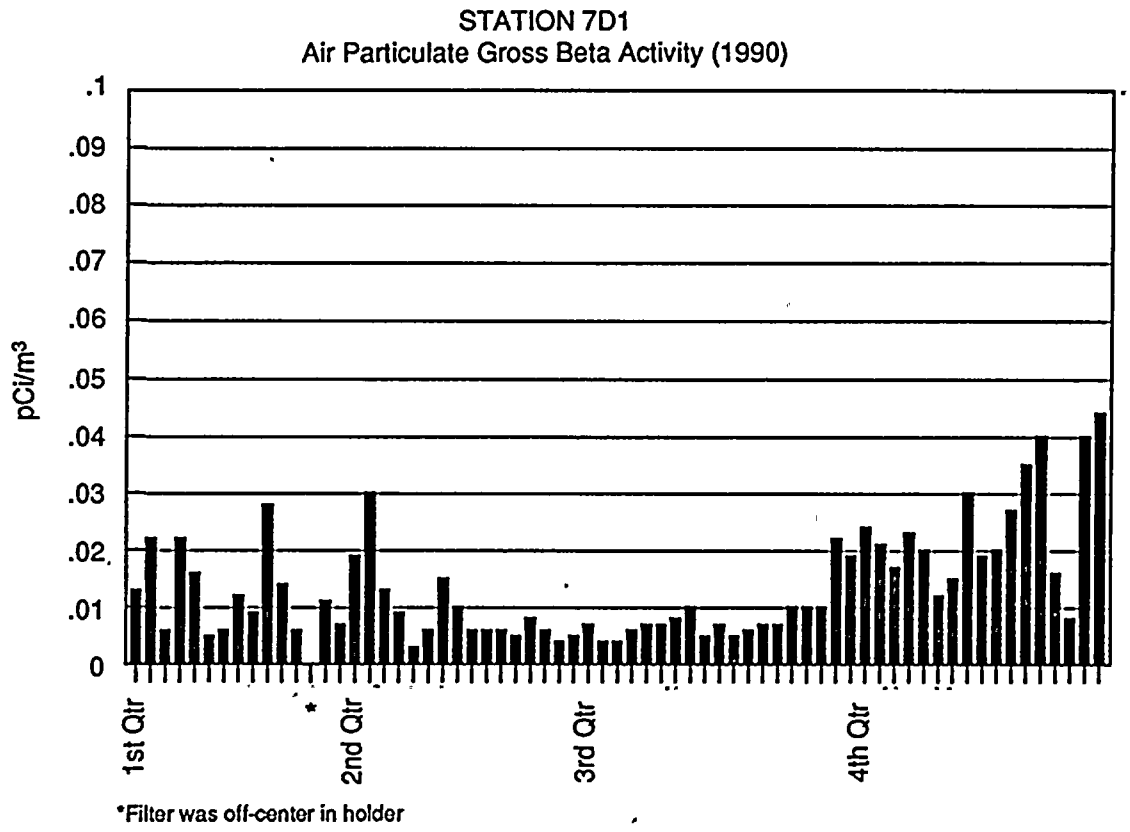

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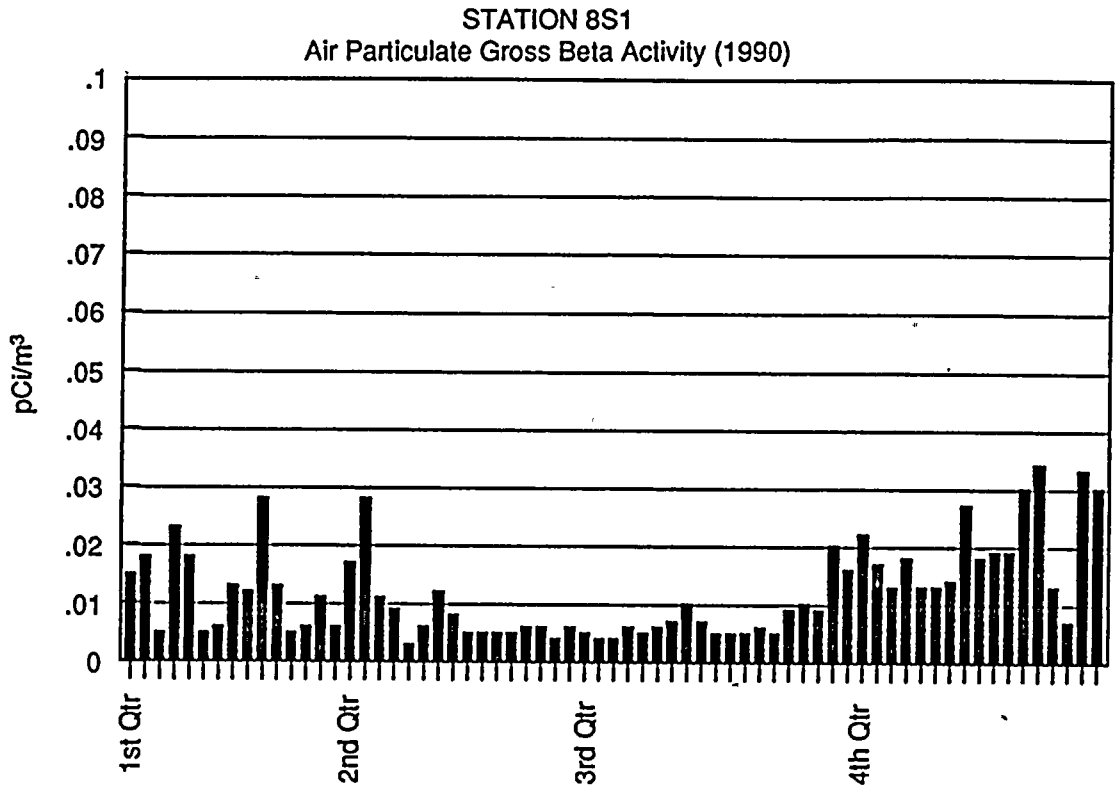

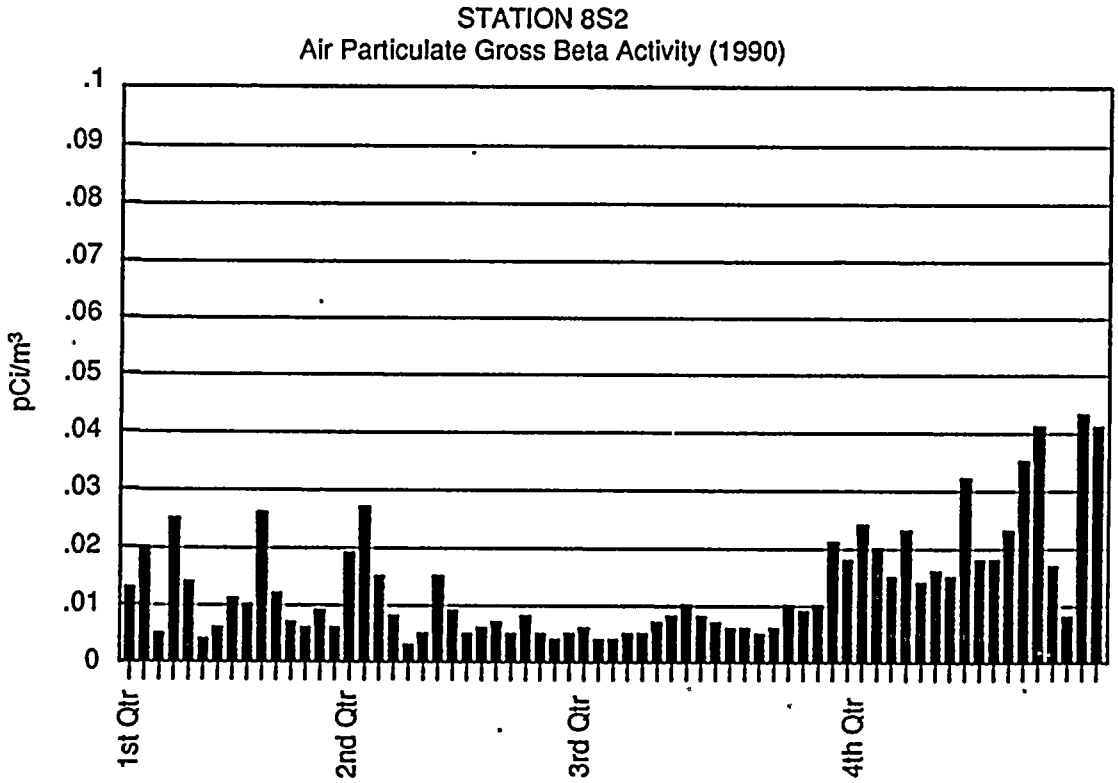

Figure 4. Continued.

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Gamma isotopic analyses, performed on quarterly composites of the air particulate filters from each station, showed no plant-related gamma activity but only naturally occurring radioactivity.

Radioiodine: A total of 522 iodine cartridges were analyzed for iodine-131. Iodine-131 was not detected at the indicator stations or control station.

DIRECT RADIATION

Dosimeters from 32 stations were collected on a quarterly basis and processed. A total of 384 TLD badges were collected; three dosimeters were placed at each station per quarter. The exposure levels from all indicator stations ranged from 9.0 to 29.1 mR/qtr with a mean of 18.4 mR/qtr. The exposure levels at the control station (2F2) ranged from 13.0 to 17.8 mR/qtr, with a mean of 15.1 mR/qtr. The exposure levels for 1990 did not differ significantly from the previous year, nor from the preoperational data. This indicates that the operation of DCPP did not affect the ambient radiation level in the plant environs. See Appendix A, Table A-10 for the summary of the TLD readings for 1990; and Appendix B, Table B-4 for the individual station data.

WATER SAMPLES

A total of 84 water samples (48 seawater samples, 12 drinking water samples, 12 surface water samples and 12 outfall water samples) were collected and analyzed. The results of the water sample analyses are summarized in Appendix A, Tables A-1(a) to (d).

Gamma isotopic analyses were performed on all water samples. The samples showed no detectable radioactivity other than natural radioactivity.

Tritium analysis was performed on all drinking water, surface water and outfall water samples. No tritium was detected in samples analyzed.

Review of the data showed that the operation of DCPP had negligible impact on the aquatic medium in the plant environs.

MARINE SAMPLES

A total of 159 marine samples were collected and analyzed. They included 38 fish samples, 30 abalone samples, 16 mussel samples, 74 algae samples, and 1 ocean bottom sediment sample. Table B-6 lists the marine samples collected for 1990. The results obtained from the indicator stations and control station are summarized in Appendix A, Tables A-3 to A-7. Appendix B, Table B-2 lists the individual samples and their detected nuclides.

Abalone: At station DCM, a red abalone sample collected in the first quarter contained Co-58 (6.19E1 pCi/kg). Co-60 was detected in 2 samples from station DCM (7.19E1 and 2.51E1 pCi/kg in the first and fourth quarter respectively) and in 1 sample from station PON (2.52E1 pCi/kg) in the third quarter.

The Co-58 and Co-60 activity concentrations detected in abalone were well below reporting levels listed in Table 6.

California mussels: Co-58, Co-60, Mn-54 and Nb-95 were detected in mussels collected at station DCM, and special interest station PON. None were detected in mussel samples from control station 7C2.

The activity concentration of Co-58 in samples with positively detected activity from station DCM ranged from 1.12E2 to 2.10E2 pCi/kg with a mean of 1.61E2 pCi/kg. At station PON, the activity concentration ranged from 7.77E1 to 9.88E1 pCi/kg with a mean of 8.83E1 pCi/kg. Co-58 was not detected in samples collected from stations POS and 7C2.

The activity concentration of Co-60 in samples with positively detected activity from station DCM ranged from 7.62E1 to 1.26E2 pCi/kg with a mean of 9.34E1 pCi/kg. At station PON, it ranged from 3.33E1 to 8.81E1 pCi/kg with a mean of 5.92E1 pCi/kg. None was detected at stations 7C2 and POS. In addition to Co-58 and Co-60, Mn-54 (2.55E1 pCi/kg) and Nb-95 (2.25E1 pCi/kg) was detected in a second quarter sample from station DCM.

All radioactivity concentration of detected nuclides were well below reporting levels.

TABLE 6

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

Analysis	Water (pCi/L)	Airborne Particulate or Grass (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/L)	Vegetables (pCi/kg, wet)
H-3	20,000*				
Mn-54	1,000		30,000		
Fe-59	400		10,000		
Co-58	1,000		30,000		
Co-60	300		10,000		
Zn-65	300		20,000		
Zr-Nb-95	400				
I-131	2**	0.9		3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba-La-140	200			300	

* For drinking water samples. This is the 40 CFR Part 141 value. If no drinking water pathway exists, a value of 30,000 pCi/L may be used.

** If no drinking water pathway exists, a value of 20 pCi/L may be used.

Fish: Cs-137 was the principal radionuclide detected in commercial fish samples collected from station 7D3. Its value ranged from 8.34E0 to 1.76E1 pCi/kg with a mean of 1.19E1 pCi/kg. Cs-137 was also detected in a rockfish sample collected from station POS. Its activity concentration was 1.20E1 pCi/kg. This value was comparable to those found in the commercial fish samples. The Cs-137 values obtained were within the range of preoperational measurements which were considered to be due to global fallout.

Only naturally occurring radionuclides were detected in the other fish samples analyzed.

Algae: A total of 74 algae samples (iridaea and bull kelp) was collected from stations DCM, 7C2, PON and POS. Some of the algae samples collected from station DCM contained Co-58, Co-60, Mn-54 and Ag-110m.

The activity concentrations of Co-58 in iridaea samples collected from station DCM ranged from 1.97E1 to 1.46E2 pCi/kg with a mean 6.81E1 pCi/kg. In bull kelp, it ranged from 6.69E0 to 1.41E1 pCi/kg with a mean of 9.36E0 pCi/kg.

The activity concentration of Co-60 in iridaea samples collected from station DCM ranged from 1.33E1 to 2.35E1 pCi/kg with a mean of 1.95E1 pCi/kg. No Co-60 was detected in the bull kelp samples.

In addition to Co-58 and Co-60, Mn-54 (2.54E1 pCi/kg) and Ag-110m (1.27E1 pCi/kg) were detected in a second quarter iridaea sample from station DCM. All radioactivity concentrations of detected nuclides were well below the reporting levels.

Sediment: An annual sample of ocean bottom sediment was collected from station DCM. Gamma analysis showed that the sample collected at DCM contained 3.65E1 pCi/kg Co-60 and 1.49E1 pCi/kg Cs-137 (based on dry weight). The radionuclide Co-60 detected was plant-related. The Cs-137 value was found to be within the preoperational range.

FOOD CROPS

A total of 35 vegetative samples were collected from three sampling locations: Cal Poly Farm (station 5F2), Kawaoka Farm (station 7G1), and Mello Farm (station 7C1). The samples analyzed contained only naturally occurring radioactivity. The operation of DCPP had no impact on this environmental medium.

MILK

A total of 12 monthly milk samples were collected from Cal Poly Farm, station 5F2. No I-131 was detected in any of the samples. The operation of the plant had no impact on this dose pathway to man.

COMPARISON OF PREOPERATIONAL AND OPERATIONAL DATA

Diablo Canyon Power Plant began commercial operation in 1985. Data from the preoperational years, 1981 to 1984, will be used for comparison with the data from the operational years.

AIRBORNE RADIOACTIVITY

Air Particulates:

TABLE 7

MEAN QUARTERLY GROSS BETA ACTIVITY

Year	All Indicator Stations Mean (range) pCi/m^3	All Control Stations Mean (range) pCi/m^3
1981	0.189 (0.004-0.766)	0.162 (0.008-0.635)
1982	0.016 (0.004-0.045)	0.016 (0.004-0.044)
1983	0.011 (0.003-0.037)	0.012 (0.003-0.039)
1984	0.012 (0.004-0.033)	0.010 (0.005-0.033)
1985	0.016 (0.003-0.057)	0.017 (0.003-0.069)
1986	0.040 (0.002-0.671)	0.042 (0.001-0.654)
1987	0.014 (0.004-0.051)	0.016 (0.004-0.052)
1988	0.014 (0.002-0.073)	0.014 (0.003-0.050)
1989	0.016 (0.001-0.085)	0.018 (0.001-0.081)
1990	0.014 (0.002-0.044)	0.012 (0.003-0.059)

Comparing the preoperational (1981-1984) and the operational (1985-1990) data for gross beta activity in air particulates [2], it can be seen that the mean quarterly gross beta activities for all stations during the operational years were within the preoperational range with the exception of 1986. The spike in gross beta activity observed then at both indicator and control stations (see Figure 5) was attributed to worldwide fallout from the Chernobyl accident in the USSR and not to plant operations. The ranges seen in 1986 were similar to those seen in 1981. The high gross beta activity in 1981 was attributed to fallout from Chinese atmospheric nuclear weapons testing.

A review of the data indicates that there is no increasing trend in the quarterly gross beta activities over time. The mean concentration at the

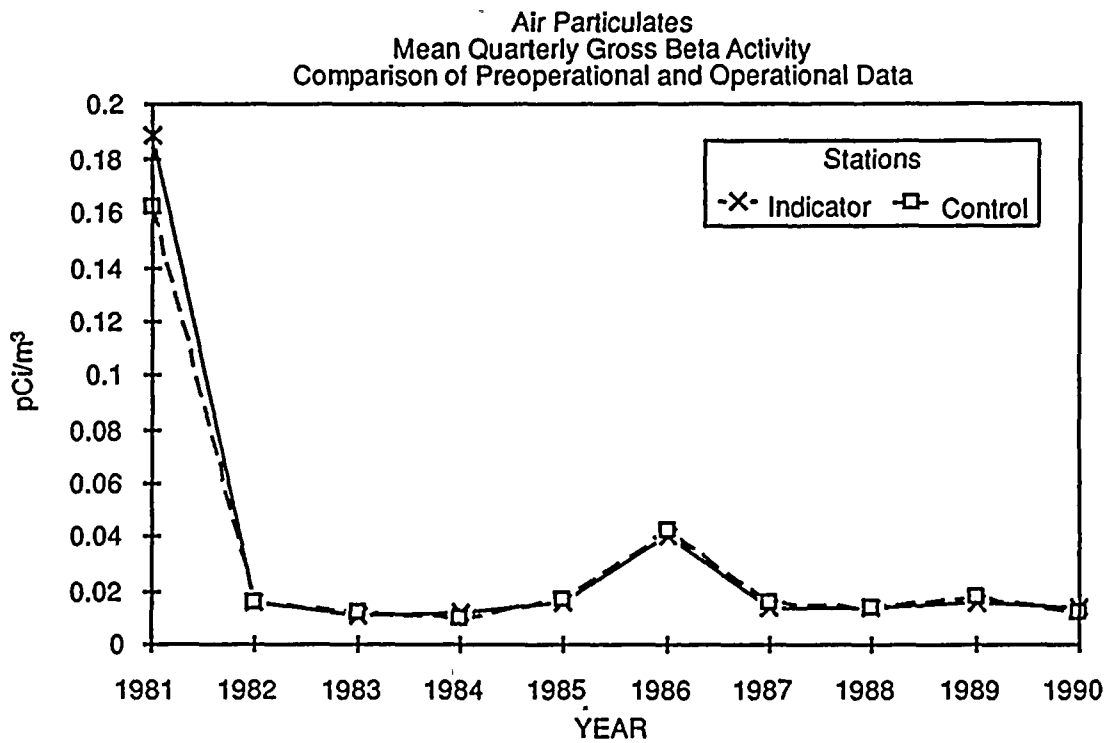

Figure 5

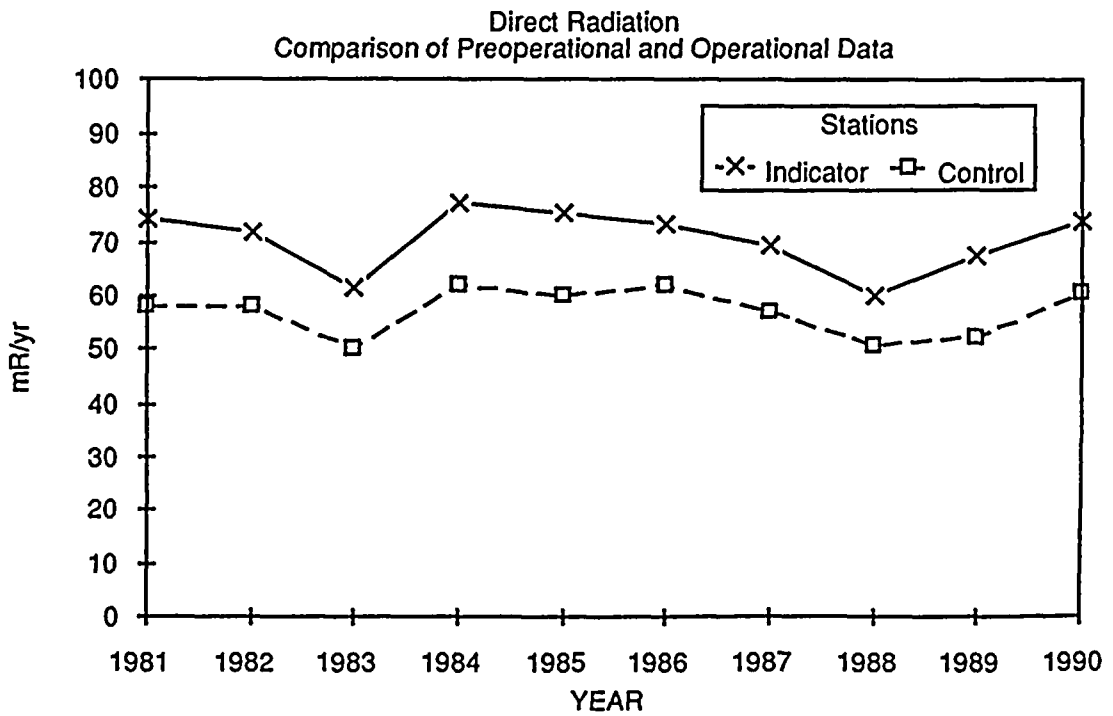

Figure 6

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indicator stations were comparable to that at the control station. It can be concluded that plant operations had no impact on this environmental medium.

Radioiodine: During the preoperational period, iodine-131 was not detected in 1981 through 1983. In 1984, I-131 was detected in three iodine cartridges from Lompoc, a supplemental station in Santa Barbara County. The mean activity concentration was 0.108 pCi/m^3 and the range was 0.014 to 0.159 pCi/m^3. Despite a thorough investigation, no explanation could be found for the source of the I-131 (see the 1984 Annual Environmental Radiological Report, Diablo Canyon Power Plant). No I-131 was detected at any other station that year.

During the operational years (1985-1990) I-131 was detected in the second quarter of 1986 at all stations. The mean at the indicator stations was 0.213 pCi/m^3 with a range of 0.007-0.823 pCi/m^3. The mean at the control station was 0.209 pCi/m^3 with a range of 0.007-0.770 pCi/m^3. The detected I-131 was attributed to worldwide fallout of the Chernobyl accident. Also in the first quarter of 1988, I-131 (0.004 pCi/m^3) was detected in one of the cartridges from station 8S1. These were the only two instances that I-131 was detected in iodine cartridges from indicator and control stations. Review of the data indicates that plant operations had no impact on this environmental medium.

DIRECT RADIATION:

TABLE 8

ENVIRONMENTAL TLD DATA (mR/yr)

Year	All indicator stations mean (range)	All control stations mean (range)
1981	74.2 (47.3-98.2)	57.8 (53.5-62.1)
1982	71.9 (48.6-95.7)	57.8 (52.3-61.7)
1983	61.2 (40.7-84.9)	50.0 (46.1-53.9)
1984	77.2 (49.6-106.9)	62.0 (57.8-66.1)
1985	75.3 (48.7-96.8)	59.8 (54.9-64.7)
1986	73.0 (47.7-97.5)	61.7 (1 station only)
1987	69.5 (42.9-94.4)	56.8 (")
1988	60.1 (40.2-84.3)	50.5 (")
1989	67.4 (44.5-92.2)	52.3 (")
1990	73.7 (50.0-102.1)	60.5 (")

Comparing the preoperational and operational TLD data in Table 8, it can be seen that the data collected during the operational years were within the preoperational range. Figure 6 shows that the annual total dose fluctuate within a narrow range at both indicator and control stations. No trend towards increasing levels is discernible. The data indicates that plant operations had negligible impact on the ambient radiation level in the plant environs.

WATER SAMPLES

Seawater: Only naturally occurring radioactivity was detected in seawater samples during the preoperational period. All the seawater samples analyzed during the operational years (1985-1990) contained only naturally occurring radioactivity also. The operation of the plant did not impact this environmental medium.

Surface Water: During the preoperational period (1981-1984), no tritium was detected in any of the surface water samples. However, Zr-95 (11.3 pCi/L), Nb-95 (15.2 pCi/L), and Ru-103 (5.3 pCi/L) were detected in one sample during this preoperational period. The presence of these radionuclides was attributed to worldwide fallout from Chinese nuclear weapons testing. For the rest of the preoperational period only naturally occurring radioactivity was detected. During the operational years (1985-1990) only naturally occurring radionuclides were detected in the samples analyzed. The operation of the plant had no impact on surface water in the Diablo Canyon environs.

Drinking Water: In 1981, Nb-95 (1.84 pCi/L) was detected in one sample which was attributed to worldwide fallout. Only naturally occurring nuclides were detected in all other samples collected during the preoperational period. Data obtained during the operational period to date were found to be within preoperational range and did not contain any plant-related nuclides. The operation of the plant had no impact on drinking water at Diablo Canyon.

Outfall Water: Only naturally occurring radionuclides were detected during the preoperational years. During the operational years tritium (6.21E2 pCi/L) was detected in one outfall water sample in 1987. In 1989, tritium (8.65E3 pCi/L)

was detected in a fourth quarter sample. Both tritium concentration level were below the reporting level. No tritium was detected in all other samples collected during the operational years.

MARINE SAMPLES

Fish: The principal radionuclide detected in fish samples during the preoperational and operational years was Cs-137. The presence of this nuclide in the environment is attributed to worldwide fallout from weapons testing and the Chernobyl accident. Due to its long half-life, it was detected as part of the environmental background in fish samples. The Cs-137 content in fish samples collected from 1981 to 1990 are as follows:

TABLE 9(a)

CESIUM-137 IN FISH

Year	All indicator stations Mean (range) pCi/kg	All control stations Mean (range) pCi/kg	Supplemental Station (commercial) Mean (range) pCi/kg
1981	11.8 (8.4-16.1)	24.6 (17.5-38.2)	24.6 (17.5-38.2)
1982	11.4 (10.5-12.3)	17.8 (10.7-30.4)	20.8 (10.7-30.4)
1983	11.0 (1 sample)	15.9 (8-26)	16.3 (10.4-26.2)
1984	None detected	16.4 (7-23)	22.0 (20.7-23.3)
1985	23.8 (20-28)	19.6 (11-19)	19.6 (12.0-35.0)
1986	None detected	19.0 (13-25)	13.1 (1 sample)
1987	8.0 (1 sample)	9.0 (1 sample)	36.8 (10.4-139.0)
1988	None detected	None detected	12.3 (8.7-15.7)
1989	8.8 (1 sample)	None detected	10.8 (6.0-16.6)
1990	None detected	None detected	11.9 (8.3-17.6)

Review of the data (see Figure 7) indicates no trend in the accumulation of Cs-137 in fish either at the control station or indicator station. Mean concentration of Cs-137 detected in fish samples during the operational years were within the operational range. It is interesting to note that the Cs-137 concentration levels detected in commercial fish is generally higher than that collected at the indicator or control stations. Also the peaks in Cs-137 levels found in fish from the indicator station seems to coincide with the peak levels of Cs-137 found in ocean sediment (Figure 8).

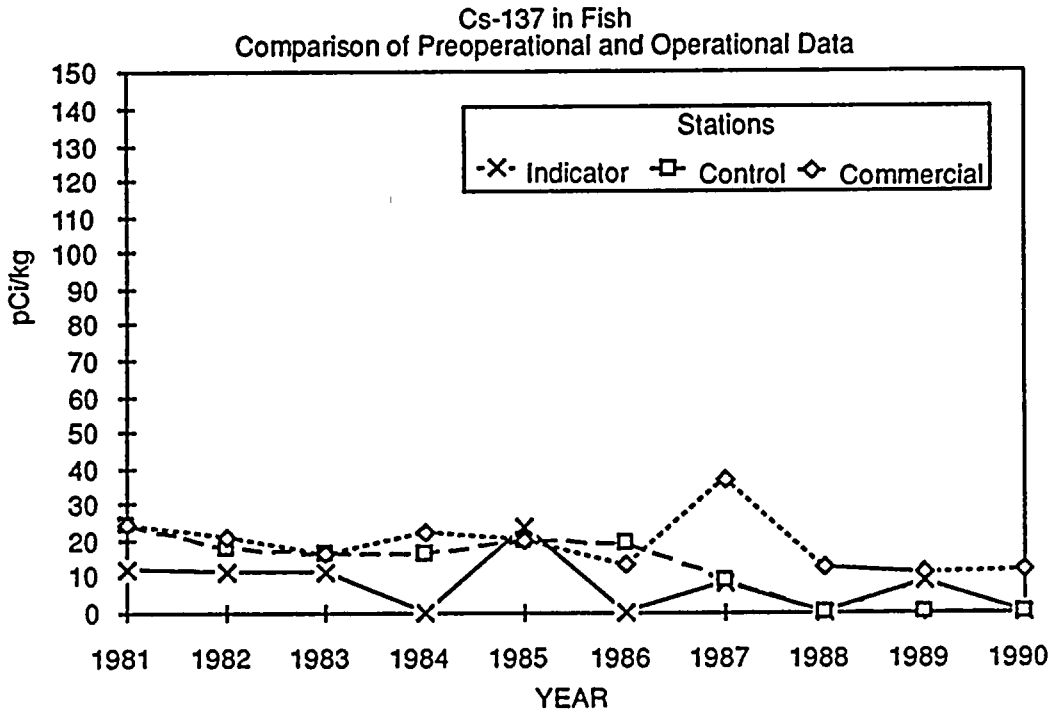

Figure 7

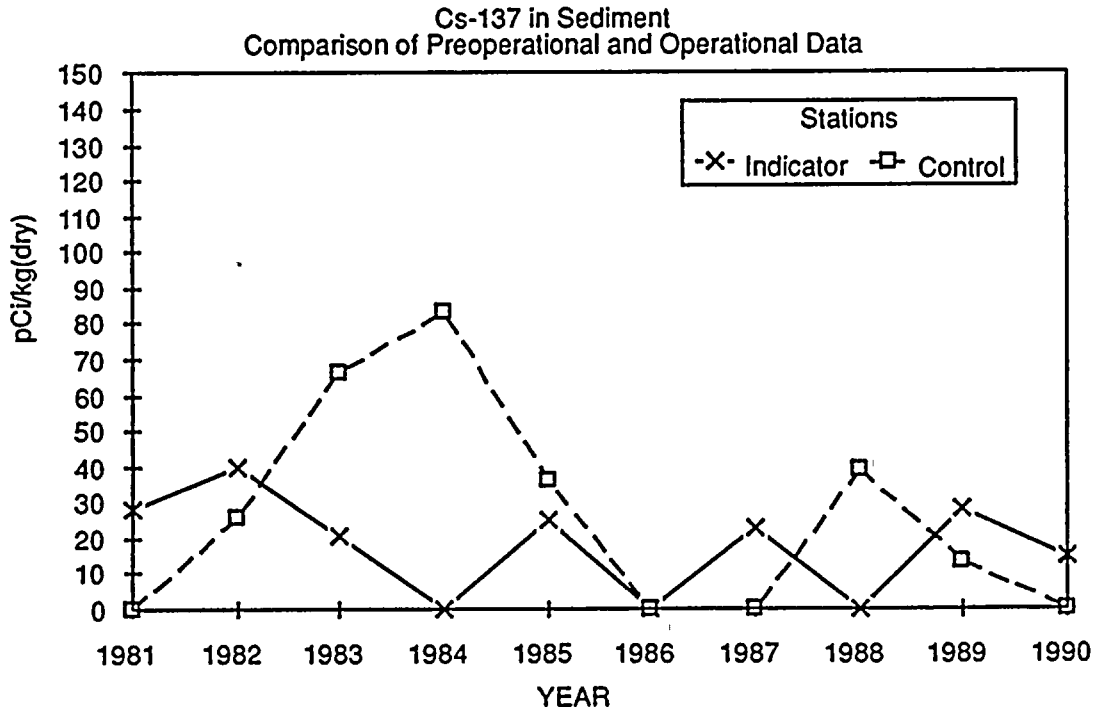

Figure 8

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During the operational years, some plant-related nuclides other than Cs-137 were detected in fish samples collected at stations DCM and PON. They are listed as follows.

TABLE 9(b)

NUCLIDES IN FISH

Year	Station	Nuclides	Activity concentration pCi/kg original
1986	DCM	I-131	70
1987	PON	Co-58	53
1988	DCM	Co-60	37

These activity concentrations were well below reporting levels. No accumulation trend of these isotopes was observed. The operation of the plant had negligible impact on this environmental medium.

Abalone: Only naturally occurring radionuclides were detected in samples collected during the preoperational period. However, during the operational years 1985-1990 some plant-related nuclides namely Co-58 and Co-60 were detected in abalone samples. They were as follows:

TABLE 10

NUCLIDES IN ABALONE

Year		All indicator stations Mean (range) pCi/kg	All control stations Mean (range) pCi/kg
1985	Co-58	81 (1 sample)	24 (1 sample)
1986	Co-58	154 (37-230)	None detected
	Co-60	33 (18-47)	None detected
1987	Co-58	40 (26-53)	None detected
	Co-60	35 (18-52)	None detected
1988	Co-58	67 (1 sample)	None detected
	Co-60	36 (1 sample)	None detected
1989	Co-58	34 (1 sample)	None detected
1990	Co-58	62 (1 sample)	None detected
	Co-60	49 (25-72)	None detected

All activity concentrations detected were below the reporting levels. Figure 9 shows the Co-58 and Co-60 mean concentration in abalone collected from the indicator station DCM. At the beginning of the operational period Co-58 concentration level peaked in 1986 but decreased substantially in subsequent years of operation. This decreasing trend demonstrates PG&E's commitment in reducing DCPP liquid effluent by pretreating and processing it prior to its release. Co-60 concentration level is generally detected at very much lower levels than Co-58. No increasing trend was observed and all fluctuations are within the statistical deviations of the data.

Mussels: All samples collected during the preoperational period contained only naturally occurring radionuclides. However, samples collected during the operational period contained nuclides that were plant-related. They are listed as follows:

TABLE 11

NUCLIDES IN MUSSELS

Year		All indicator stations Mean (range) pCi/kg	All control stations Mean (range) pCi/kg
1985	Co-58	483 (245-853)	66 (21-109)
	Co-60	138 (106-170)	None detected
1986	Co-58	852 (208-1710)	284 (159-508)
	Co-60	158 (52-218)	78 (50-11)
	Mn-54	34 (1 sample)*	None detected
	Nb-95	43 (1 sample)*	None detected
1987	Co-58	453 (111-1100)	None detected
	Co-60	142 (56-262)	None detected
1988	Co-58	265 (219-343)	None detected
	Co-60	116 (89-131)	18 (1 sample)
1989	Co-58	72 (28-126)	None detected
	Co-60	60 (51-69)	None detected
1990	Co-58	161 (112-210)	None detected
	Co-60	93 (76-126)	None detected
	Mn-54	26 (1 sample)*	None detected
	Nb-95	23 (1 sample)*	None detected

All activity concentrations were well below the reporting levels. Review of the data indicates that at the beginning of the operational period, Co-58 concentration level peaked in 1986 (see Figure 10). A notable decrease in Co-58 was seen in subsequent years of operation. The Co-60 concentration level in mussels was observed to decrease gradually with time. The data does not suggest an increasing trend in the Co-58 and Co-60 levels in mussels. Comparing Figures 9 and 10 it can be seen that the mean concentrations of Co-58 and Co-60 in samples collected at the indicator station DCM were generally higher in mussels than in abalone.

Algae: Algae samples analyzed during the preoperational period contained only natural radioactivity. However, some samples collected from 1985 through 1990 did contain the following isotopes:

TABLE 12

NUCLIDES IN ALGAE

Year		All indicator stations Mean (range) pCi/kg	All control stations Mean (range) pCi/kg
1985	Co-58	179 (9-431)	53 (29-98)
	Co-60	190 (24-881)	None detected
	Mn-54	79 (11-349)	14 (1 sample)
	Cs-137	None detected	22 (1 sample)
1986	Co-58	298 (44-624)	48 (14-109)
	Co-60	70 (13-172)	6 (1 sample)
	Mn-54	24 (15-35)	None detected
	I-131	396 (31-1180)	18 (8-28)
	Fe-59	285 (1 sample)*	None detected
	Cr-51	322 (1 sample)*	None detected
1987	Co-58	131 (5-591)	None detected
	Co-60	92 (27-129)	None detected
	Mn-54	26 (9-65)	None detected
	I-131	57 (33-91)	7 (1 sample)
	Cs-137	None detected	4 (1 sample)
	Nb-95	11 (1 sample)	None detected
1988	Co-58	130 (19-523)	None detected
	Co-60	135 (1 sample)	None detected
	Mn-54	12 (1 sample)	None detected
	I-131	None detected	22 (1 sample)

* contained in the same sample collected for that year

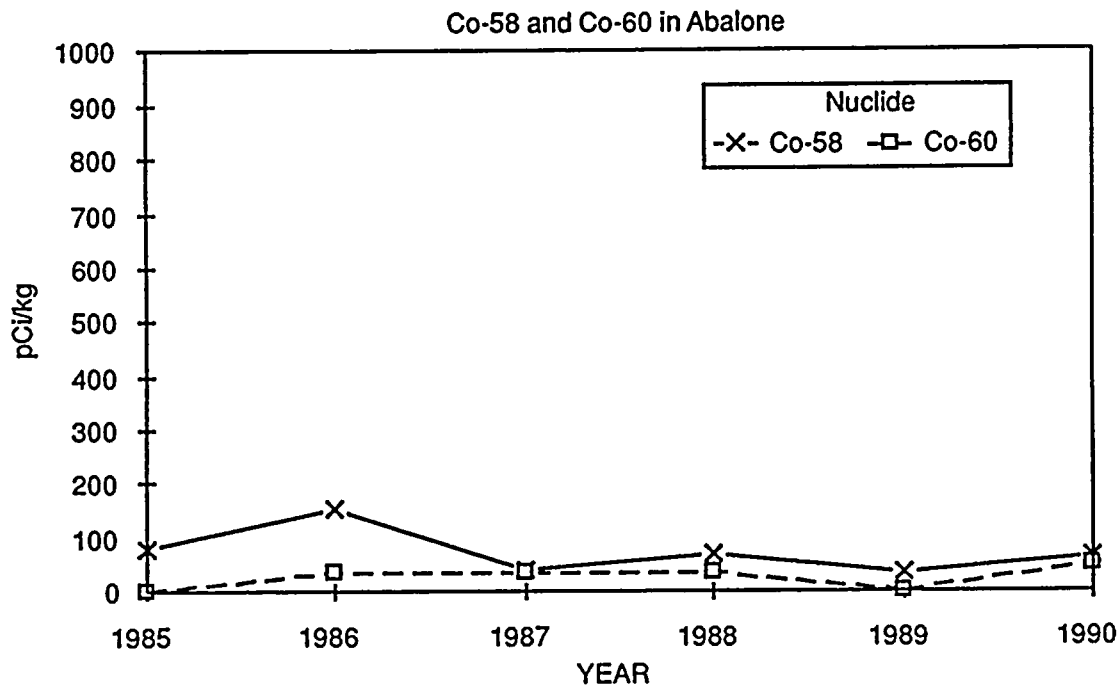

Figure 9

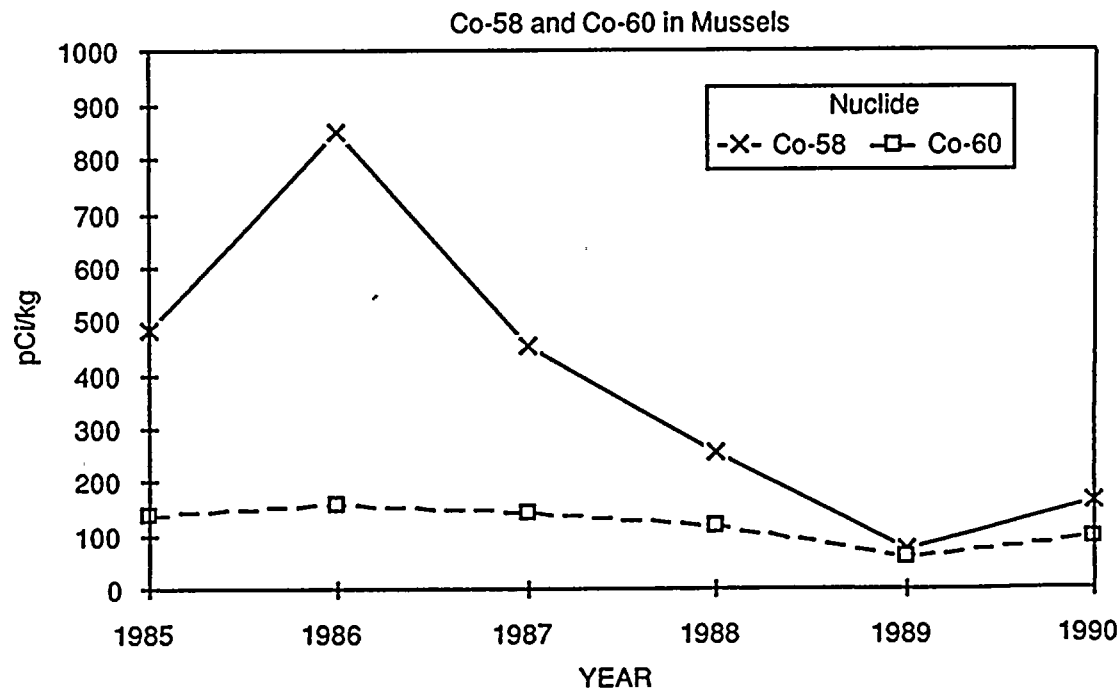

Figure 10

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1989	Co-58	9	(5-14)	None detected
	Co-60	11	(9-12)	None detected
	I-131	23	(8-35)	29 (10-52)
1990	Co-58	39	(7-146)	None detected
	Co-60	20	(13-24)	None detected
	Mn-54	25	(1 sample)*	None detected
	Ag-110m	13	(1 sample)*	None detected

The activity concentrations of radionuclides detected in algae were well below reporting levels. It is observed in Figure 11 that there is a decreasing trend in the concentration levels for the three isotopes Co-58, Co-60, and Mn-54 at the indicator station. No trend is observed for the other isotopes detected because their respective concentration levels fluctuated unpredictably.

Sediment: Sediment samples collected during preoperational and operational years from DCPP environs contained Cs-137 which was attributed to worldwide fallout from previous nuclear weapons testing. Their activity concentrations are summarized below.

TABLE 13(a)

CESIUM-137 IN SEDIMENT

Year		All indicator stations Mean (range) pCi/kg (dry)	All control stations Mean (range) pCi/kg (dry)
1981	Cs-137	28 (17.8-34.3)	None detected
1982	Cs-137	40 (30-50)	25.7 (24-27)
1983	Cs-137	21 (10.6-30.5)	65.6 (37.6-93.6)
1984	Cs-137	None detected	83 (1 sample)
1985	Cs-137	25 (17-39)	36 (1 sample)
1986	Cs-137	None detected	None detected
1987	Cs-137	23 (1 sample)	None detected
1988	Cs-137	None detected	39 (1 sample)
1989	Cs-137	28 (1 sample)	13 (1 sample)
1990	Cs-137	15 (1 sample)	None detected

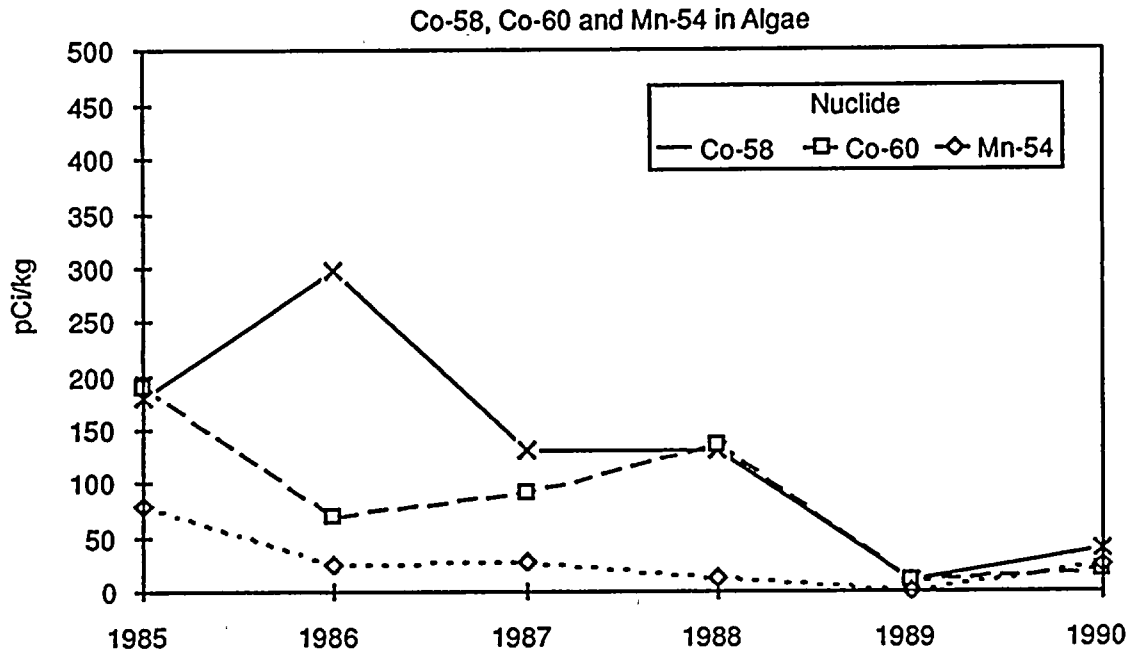

Figure 11

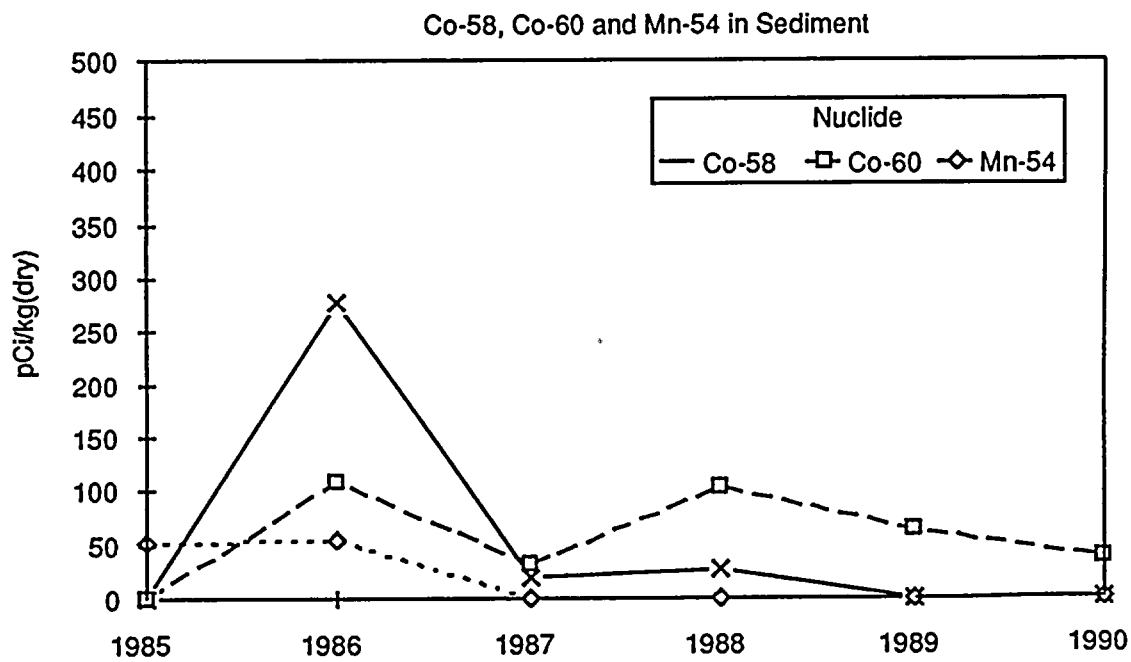

Figure 12

91-3-173/TI-56

The data did not indicate an increasing trend. Note that at times during the operational period (see Figure 8), the Cs-137 level was higher at the control station than at the indicator station. The data also show that Cs-137 activity concentrations found during the operational period were within the preoperational range, it can be concluded that the operation of the plant had negligible impact on this environmental medium.

Besides Cs-137, sediment samples collected at indicator station DCM from 1985 to 1989 contained radionuclides that were plant-related. They are listed as follows:

TABLE 13(b)

NUCLIDES IN SEDIMENT

Year*		Station DCM Mean(range) pCi/kg (dry)
1985	Mn-54	51 (37-64)
	Fe-59	119 (66-148)
1986	Mn-54	55
	Co-58	277
	Co-60	109
1987	Co-58	20
	Co-60	33
1988	Co-58	27
	Co-60	102
1989	Co-60	65
1990	Co-60	37

* only one annual sample is collected at station DCM from 1986 onwards.

Figure 12 shows the concentration of Co-58, Co-60 and Mn-54 in sediment collected at the indicator station DCM. As with the abalones and mussels samples, the sediment samples show a high concentration of Co-58 in 1986 followed by a notable decrease in subsequent years. There was also a marked decrease in Mn-54 concentrations. It was not detected in subsequent years

following 1987. The concentration of Co-60 fluctuated during the operational period and is seen to be reducing with time. No trend of increasing buildup was observed in the data for these three isotopes.

FOOD CROPS

Review of preoperational and operational data for food crops indicated that samples collected from indicator and control stations contained only natural radioactivity. There were, however, two exceptions. In 1981, during the preoperational period, Cs-137 was detected in some vegetative samples. This was due to worldwide fallout from nuclear weapons testing. The mean activity concentration was 48 pCi/kg and the range was 3-136 pCi/kg. It was not detected in subsequent years until 1986.

In 1986, along with Cs-137 (9 pCi/kg), I-131, Cs-134, and Ru-103 (see Table 14) were detected in vegetative samples from indicator stations and I-131 was detected at the control station. Their presence was attributed to worldwide fallout from the Chernobyl accident.

TABLE 14

NUCLIDES IN FOOD CROPS

Year		All indicator stations Mean (range)pCi/kg wet	All control stations Mean (range)pCi/kg wet
1986	I-131	27 (4-49)	90 (one sample)
	Cs-134	4 (one sample)	none detected
	Ru-103	9 (one sample)	none detected
	Cs-137	9 (one sample)	none detected

It can be concluded that plant operations did not impact this environmental medium.

MILK

During the preoperational period, Cs-137 was detected only in samples collected in 1981; the mean and range at indicator and control stations were 1.59 (1.11-2.06) and 1.73 (1.35-2.29) pCi/L respectively. During the

operational years, it was detected in only one sample (2 pCi/L) from station 8H1 in 1987. This station, Caroni Dairy, closed in 1988. The Cs-137 concentration level detected was within the preoperational range.

During the preoperational years, I-131 was not detected in any milk samples collected. During the operational years, due to worldwide fallout during the Chernobyl accident, I-131 was detected in two samples from station 8H1 and one sample from station 5F2 in 1986. Their values were as follows:

TABLE 15

NUCLIDES IN MILK

Station	Collection Date	I-131 pCi/L
8H1	5/19/86	89
5F2	5/19/86	2
8H1	6/23/86	2

I-131 was not detected in samples collected and analyzed in subsequent years. The data indicates that plant operations did not impact this environmental medium.

PROGRAM VARIANCE

AIRBORNE RADIOACTIVITY

Some collection time was lost during certain collection periods because of mechanical failure of equipment. In one case, the air sampler at station 1S1 was down during the entire collection period (4/12/90 - 4/18/90); no sample was collected. Table 16 lists the stations, their corresponding collection period and a brief description of the problem that occurred.

On the occasions when the air samplers were out of service, data from stations in the vicinity were reviewed. It was determined that these variances were insignificant. The down time of the samplers at each station were tracked throughout the year, and it was found that the mean percent availability for all on-site and off-site samplers was 99.5 percent (i.e. on the average, all samplers were up and running 99.5 percent of the time).

In the 1989 DCPP annual radiological environmental report, it was reported that, at station 2F2, the collection period (7/12/89 - 7/20/89) exceeded the seven-day requirement for air sample exchange by one day. Also, it was reported that for the collection period (3/22/89 - 3/28/89), the air sampler at station 8S2 was not changed out until the end of the subsequent collection period. In both instances, the variances were due to personnel error. Corrective actions were taken at that time; the technicians underwent retraining to prevent recurrence of these incidents. This information regarding corrective actions taken was inadvertently left out of the 1989 report. Hence it is included here in this report.

TERRESTRIAL SAMPLES

Vegetative greens are collected monthly at three stations: 5F2, 7G1 and 7C1. In July, vegetative greens were not collected at station 7G1 because of seasonal unavailability.

TABLE 16

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
SUMMARY OF AIR SAMPLER UNAVAILABILITY

Station	Collection Period	Problem Description
MT1	05/25 - 05/31/90	Time lost due to equipment failure.
1S1	04/04 - 04/12/90	Time lost due to timer malfunction.
1S1	04/12 - 04/18/90	No sample collected - equipment failure.
1S1	04/18 - 04/24/90	Time lost due to vacuum malfunction.
7D1	12/27/90 - 01/02/91	Time lost due to timer malfunction.
8S1	01/12 - 01/18/90	Time lost due to equipment failure.
8S1	01/18 - 01/24/90	Time lost due to equipment failure.

MARINE SAMPLES

Marine sample collection is subject to seasonal unavailability and unfavorable weather and sampling conditions. Every possible effort was made to collect these samples. However, at station 7C2, rockfish was unavailable for collection during the first quarter and abalone was unavailable in the second quarter of 1990.

Attempts were made to sample monthly for bull kelp and quarterly for iridaea. At station DCM, bull kelp was available only in June, July and August; iridaea was unavailable during the first quarter of 1990. At station 7C2, bull kelp blades were unavailable in April and May. At stations PON and POS, bull kelp was unavailable in April and May.

REFERENCES

1. Environmental Radiological Monitoring Procedures - DCPP (Normal Operations), Pacific Gas and Electric Co. Technical and Ecological Services, Quality Control Manual, Volume V-A.

2. 1981-1989 Annual Environmental Radiological Reports, Diablo Canyon Power Plant. Pacific Gas and Electric Co.

3. NRC Branch Technical Position on Environmental Monitoring for Direct Radiation, Revision 1, November 1979.

4. Environmental Monitoring Program for Diablo Canyon Units 1 and 2 Technical Specifications, Section 3/4.12.

Appendix A

ENVIRONMENTAL RADIATION MONITORING PROGRAM SUMMARIES

TABLE A-1a

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant
Location of Facility San Luis Obispo, California
(County, State)

Docket No. 50-275 and 50-323
Report Period 1/1/90-12/31/90

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Indicator Location with Highest Annual Mean: Name, Distance and Direction	Indicator Location with Highest Annual Mean: Mean(b) Range(b)	All Indicator Locations Mean(b) Range(b)	All Control Locations Mean(b) Range(b)	Number of Reportable Occurrences
Seawater (pCi/L)							
	Gamma Isotopic (48)						0
	54Mn				None detected	None detected	
	59Fe				None detected	None detected	
	58Co				None detected	None detected	
	60Co				None detected	None detected	
	65Zn				None detected	None detected	
	95Zr				None detected	None detected	
	95Nb				None detected	None detected	
	131I				None detected	None detected	
	134Cs				None detected	None detected	
	137Cs				None detected	None detected	
	140Ba				None detected	None detected	
	140La				None detected	None detected	

(a) Unless specified, all required LLDs were met in accordance with Table 5.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.

TABLE A-1b

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant
Location of Facility San Luis Obispo, California
(County, State)

Docket No. 50-275 and 50-323
Report Period 1/1/90-12/31/90

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Location (c) Name, Distance and Direction	Mean(b) Range(b)	Number of Reportable Occurrences
Surface water (pCi/L)	Tritium (12)		Sta. 5S2 0.6 mi, 65°	None detected	0
	Gamma Isotopic (12)				0
	54Mn			None detected	
	59Fe			None detected	
	58Co			None detected	
	60Co			None detected	
	65Zn			None detected	
	95Zr			None detected	
	95Nb			None detected	
	131I			None detected	
	134Cs			None detected	
	137Cs			None detected	
	140Ba			None detected	
	140La			None detected	

(a) Unless specified, all required LLDs were met in accordance with Table 5.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) Only one station location for this sample type; therefore, no control stations are listed.

TABLE A-1c

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant — Docket No. 50-275 and 50-323
Location of Facility San Luis Obispo, California (County, State) — Report Period 1/1/90-12/31/90

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Location (c) Name, Distance and Direction	Mean(b) Range(b)	Number of Reportable Occurrences
Drinking water (pCi/L)	Tritium (12)		Sta. DW1 0.0 mi, in plant	None detected	0
	Gamma Isotopic (12)				0
	54Mn			None detected	
	59Fe			None detected	
	58Co			None detected	
	60Co			None detected	
	65Zn			None detected	
	95Zr			None detected	
	95Nb			None detected	
	131I			None detected	
	134Cs			None detected	
	137Cs			None detected	
	140Ba			None detected	
	140La			None detected	

(a) Unless specified, all required LLDs were met in accordance with Table 5.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) Only one station location for this sample type; therefore, no control stations are listed.

TABLE A-1d

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant
Location of Facility San Luis Obispo, California
(County, State)

Docket No. 50-275 and 50-323
Report Period 1/1/90-12/31/90

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Location (c) Name, Distance and Direction	Mean (b) Range	Number of Reportable Occurrences
Outfall water (pCi/L)	Tritium (12)		Sta. OUT 0.2 mi, 270°	None detected	0
	Gamma Isotopic (12)				0
	54Mn			None detected	
	59Fe			None detected	
	58Co			None detected	
	60Co			None detected	
	65Zn			None detected	
	95Zr			None detected	
	95Nb			None detected	
	131I			None detected	
	134Cs			None detected	
	137Cs			None detected	
	140Ba			None detected	
	140La			None detected	

(a) Unless specified, all required LLDs were met in accordance with Table 5.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) Only one station location for this sample type; therefore, no control stations are listed.

TABLE A-2

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant Docket No. 50-275 and 50-323
Location of Facility San Luis Obispo, California Report Period 1/1/90-12/31/90
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Indicator Location with Highest Annual Mean: Name, Distance and Direction	Indicator Location with Highest Annual Mean: Mean(b) Range(b)	All Indicator Locations Mean(b) Range(b)	All Control Locations Mean(b) Range(b)	Number of Reportable Occurrences
Airborne (pCi/m^3)	131I (cartridge) (522)				None detected	None detected	0
	Gross Beta (air particulates) (522)		Sta. 5F1 11.2 mi, 68°	1.4E-2 2.0E-3-4.2E-2	1.4E-2(468/468) 2.0E-3-4.4E-2	1.2E-2(54/54) 3.0E-3-5.9E-2	0
	Gamma Isotopic (air particulates) (522)				ND	ND	0

(a) Unless specified, all required LLDs were met in accordance with Table 5.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE A-3

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant — Docket No. 50-275 and 50-323
Location of Facility San Luis Obispo, California (County, State) — Report Period 1/1/90-12/31/90

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Indicator Location (c) Name, Distance and Direction	Indicator Location Mean(b) Range(b)	All Control Locations Mean(b) Range(b)	Number of Reportable Occurrences
Fish (pCi/kg wet)	Gamma Isotopic (15)		Sta. DCM 0.2 mi, 270°	Sta. DCM	Sta. 7C2	0
	54Mn			None detected	None detected	
	59Fe			None detected	None detected	
	58Co			None detected	None detected	
	60Co			None detected	None detected	
	65Zn			None detected	None detected	
	134Cs			None detected	None detected	
	137Cs			None detected	None detected	
	131I			None detected	None detected	

(a) Unless specified, all required LLDs were met in accordance with Table 5.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) Only one indicator location for this sample type.

TABLE A-4

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant
Location of Facility San Luis Obispo, California
(County, State)

Docket No. 50-275 and 50-323
Report Period 1/1/90-12/31/90

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Indicator Location (c) Name, Distance and Direction	Indicator Location Mean(b) Range(b)	All Control Locations Mean(b) Range(b)	Number of Reportable Occurrences
Abalones (pCi/kg wet)	Gamma Isotopic (14)		Sta. DCM 0.2 mi, 270°	Sta. DCM	Sta. 7C2	0
	54Mn			None detected	None detected	
	59Fe			None detected	None detected	
	58Co			6.19E1(1/8)	None detected	
	60Co			4.85E1(2/8) (2.51E1-7.19E1)	None detected	
	65Zn			None detected	None detected	
	134Cs			None detected	None detected	
	137Cs			None detected	None detected	
	131I			None detected	None detected	

(a) Unless specified, all required LLDs were met in accordance with Table 5.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) Only one indicator location for this sample type.

TABLE A-5

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant
Location of Facility San Luis Obispo, California
(County, State)

Docket No. 50-275 and 50-323
Report Period 1/1/90-12/31/90

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Indicator Location (c) Name, Distance and Direction	Indicator Location Mean(b) Range(b)	All Control Locations Mean(b) Range(b)	Number of Reportable Occurrences
Mussels (pCi/kg wet)	Gamma Isotopic (8)		Sta. DCM 0.2 mi, 270°	Sta. DCM	Sta. 7C2	0
	54Mn			2.55E1(1/4)	None detected	
	59Fe			None detected	None detected	
	58Co			1.61E2(2/4) (1.12E1-2.10E2)	None detected	
	60Co			9.34E1(4/4) (7.62E1-1.26E2)	None detected	
	95Nb			2.25E1(1/4)	None detected	
	134Cs			None detected	None detected	
	137Cs			None detected	None detected	
	131I			None detected	None detected	

(a) Unless specified, all required LLDs were met in accordance with Table 5.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) Only one indicator location for this sample type.

TABLE A-6

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant — Docket No. 50-275 and 50-323
Location of Facility San Luis Obispo, California (County, State) — Report Period 1/1/90-12/31/90

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Indicator Location (c) Name, Distance and Direction	Indicator Location Mean(b) Range(b)	All Control Locations Mean(b) Range(b)	Number of Reportable Occurrences
Algae (pCi/kg wet)	Gamma Isotopic (34)		Sta. DCM 0.2 mi, 270°	Sta. DCM	Sta. 7C2	0
	54Mn			2.54E1(1/8)	None detected	
	59Fe			None detected	None detected	
	57Co			None detected	None detected	
	58Co			3.87E1(6/8) (6.69E0-1.46E2)	None detected	
	60Co			1.95E1(3/8) (1.33E1-3.25E1)	None detected	
	131I			None detected	None detected	
	110Ag			1.27E1(1/8)	None detected	
	137Cs			None detected	None detected	

(a) Unless specified, all required LLDs were met in accordance with Table 5.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) Only one indicator location for this sample type.

TABLE A-7

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant
Location of Facility San Luis Obispo, California
(County, State)

Docket No. 50-275 and 50-323
Report Period 1/1/90-12/31/90

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Indicator Location (c) Name, Distance and Direction	Indicator Location Mean(b) Range(b)	All Control Locations Mean(b) Range(b)	Number of Reportable Occurrences
Sediment (pCi/kg dry)	Gamma Isotopic (1)		Sta. DCM 0.2 mi, 270°	Sta. DCM		0
	54Mn			None detected		
	59Fe			None detected		
	58Co			None detected		
	60Co			3.65E1(1/1)		
	65Zn			None detected		
	134Cs			None detected		
	137Cs			1.49E1(1/1)		

(a) Unless specified, all required LLDs were met in accordance with Table 5.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) Only one indicator location for this sample type.

TABLE A-8

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant Docket No. 50-275 and 50-323
Location of Facility San Luis Obispo, California Report Period 1/1/90-12/31/90
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Indicator Location with Highest Annual Mean: Name, Distance and Direction	Indicator Location with Highest Annual Mean: Mean(1)(b) Range(b)	All Indicator Locations Mean(1)(b) Range(b)	All Control Locations Mean(1)(b) Range(b)	Number of Reportable Occurrences
						Sta. 5F2	
Milk (pCi/L)	131I (12)					None detected	0
	Gamma Isotopic (12)						0
	134Cs					None detected	
	137Cs					None detected	
	140Ba					None detected	
	140La					None detected	

(a) Unless specified, all required LLDs were met in accordance with Table 5.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE A-9

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant Docket No. 50-275 and 50-323
Location of Facility San Luis Obispo, California Report Period 1/1/90-12/31/90
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Indicator Location with Highest Annual Mean: Name, Distance and Direction	Indicator Location with Highest Annual Mean: Mean(b) Range(b)	All Indicator Locations Mean(b) Range(b)	All Control Locations Mean(b) Range(b)	Number of Reportable Occurrences
Food crops (pCi/kg wet)	Gamma Isotopic (35)				Sta. 7C1, 7G1	Sta. 5F2	0
	131I				None detected	None detected	
	134Cs				None detected	None detected	
	137Cs				None detected	None detected	

(a) Unless specified, all required LLDs were met in accordance with Table 5.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.

TABLE A-10

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility Diablo Canyon Power Plant
Location of Facility San Luis Obispo, California
(County, State)

Docket No. 50-275 and 50-323
Report Period 1/1/90-12/31/90

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection(a) (LLD)	Indicator Location with Highest Annual Mean: Name, Distance and Direction	Indicator Location with Highest Annual Mean: Mean(b) Range(b)	All Indicator Locations Mean(b) Range(b)	All Control Locations Mean(b) Range(b)	Number of Reportable Occurrences
Direct radiation (mR)	TLD Packets (384)	3 mR/qtr	Sta. 5S1 0.4 mi, 48°	25.5 mR/qtr (12/12) 23.1-29.1 mR/qtr	18.4 mR/qtr (372/372) 9.0-29.1 mR/qtr	Sta. 2F2 15.1 mR/qtr (12/12) 13.0-17.8 mR/qtr	0
				102.1 mR/yr	73.7 mR/yr (372/372) 50.0-102.1 mR/yr	60.5 mR/yr	

(a) Sensitivity of TLD system.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis; e.g., (10/12) means 10 samples out of 12 collected showed activity.

TABLE A-11

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT[1]
EPA ENVIRONMENTAL RADIOLOGICAL LABORATORY INTERCOMPARISON STUDIES PROGRAM

Sample Type	Radionuclide	Month	TES	EPA	ALL[2]	TES/EPA	TES/ALL
Air Filter	Gross Alpha	Mar.	6.00	5.00	6.25	1.20	0.96
		Aug.	11.00	10.00	12.21	1.10	0.90
	Gross Beta	Mar.	32.00	31.00	32.19	1.03	0.99
		Aug.	65.33	62.00	64.66	1.05	1.01
	Cs-137	Mar.	12.00	10.00	11.56	1.20	1.04
		Aug.	27.33	20.00	22.70	1.37	1.20
	Sr-90	Mar.	9.67	10.00	9.69	0.97	1.00
		Aug.	20.00	20.00	19.45	1.00	1.03
Milk	I-131	Apr.	10.57	9.90	9.85	1.07	1.07
		Sep.	62.33	58.00	58.88	1.07	1.06
	Cs-137	Apr.	26.33	24.00	24.65	1.10	1.07
		Sep.	19.67	20.00	21.47	0.98	0.92
	K-40	Apr.	14.13	15.50	15.48	0.91	0.91
		Sep.	15.37	17.00	17.14	0.90	0.90
Water	H-3	Feb.	47.83	49.76	49.16	0.96	0.97
		Jun.	31.77	29.33	29.67	1.08	1.07
		Oct.	72.87	72.03	71.25	1.01	1.02
	Sr-89	Jan.	23.67	25.00	25.33	0.95	0.93
		Apr.	12.67	10.00	12.71	1.27	1.00
		May	6.00	7.00	7.64	0.86	0.79
		Oct.	23.00	20.00	18.84	1.15	1.22
	Sr-90	Jan.	17.67	20.00	19.23	0.88	0.92
		Apr.	10.67	10.00	9.50	1.07	1.12
		May	6.00	7.00	7.02	0.86	0.85
		Oct.	12.67	15.00	14.44	0.84	0.88
	I-131	Feb.			Cancelled by EPA		
		Aug.	39.33	39.00	40.26	1.01	0.98
	Co-60	Feb.	15.33	15.00	15.31	1.02	1.00
		Jun.	24.00	24.00	25.12	1.00	0.96
		Oct.	19.67	20.00	20.53	0.98	0.96
	Zn-65	Feb.	14.33	13.90	13.89	1.03	1.03
		Jun.	15.37	14.80	14.92	1.04	1.03
		Oct.	11.50	11.50	11.63	1.00	0.99
	Ru-106	Feb.	12.83	13.90	13.36	0.92	0.96
		Jun.	20.10	21.00	20.10	0.96	1.00
		Oct.	13.83	15.10	14.04	0.92	0.99
	Ba-133	Feb.	71.67	74.00	72.49	0.97	0.99
		Jun.	99.00	99.00	96.33	1.00	1.03
		Oct.	10.47	11.00	10.77	0.95	0.97
Water	Cs-134	Feb.	16.67	18.00	17.00	0.93	0.98
		Apr.	16.33	15.00	14.44	1.09	1.13
		Jun.	23.67	24.00	23.26	0.99	1.02
		Oct.	10.00	12.00	11.89	0.83	0.84
		Oct.	6.67	7.00	7.49	0.95	0.89

TABLE A-11 - Continued

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT(1)
EPA ENVIRONMENTAL RADIOLOGICAL LABORATORY INTERCOMPARISON STUDIES PROGRAM

Sample Type	Radionuclide	Month	TES	EPA	ALL(2)	TES/EPA	TES/ALL
Water	Cs-137	Feb.	18.00	18.00	18.76	1.00	0.96
		Apr.	15.00	15.00	15.80	1.00	0.95
		Jun.	26.67	25.00	26.21	1.07	1.02
		Oct.	12.67	12.00	13.11	1.06	0.97
		Oct.	5.00	5.00	5.94	1.00	0.84
	Gross Alpha	Jan.	12.67	12.00	11.51	1.06	1.10
		Apr.	71.00	90.00	81.18	0.79	0.87
		May	8.67	22.00	16.97	0.39	0.51
		Sep.	6.00	10.00	10.01	0.60	0.60
		Oct.	59.00	62.00	60.64	0.95	0.97
	Gross Beta	Jan.	16.67	12.00	12.91	1.39	1.29
		Apr.	45.33	52.00	49.06	0.87	0.92
		May	16.33	15.00	16.16	1.09	1.01
		Sep.	12.33	10.00	10.91	1.23	1.13
		Oct.	52.67	53.00	50.78	0.99	1.04

(1) All of the values shown are relative therefore, the total activity or concentration levels are not indicated.
(2) The "ALL" designation refers to all participating laboratories which performed similar analyses. Those values considered by EPA to be statistical outliners are excluded.

Appendix B

SAMPLE ANALYTICAL RESULTS

TABLE B-1

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
1990 STATE CROSS-CHECK RESULTS

SAMPLE	STATION	SAMPLE NO.	COLLECTION DATE	GAMMA ACTIVITY pCi/L ORIGINAL	K-40 ACTIVITY pCi/L or pCi/kg ORIGINAL	H-3 ACTIVITY pCi/L	I-131 ACTIVITY pCi/L or pCi/kg
Drinking Water	DW1	90A31	01/17/90	ND	92	ND	ND
		90B48	02/21/90	ND	34	ND	ND
		90C95	03/28/90	ND	< 31	ND	ND
		90E12	04/30/90	ND	160	ND	ND
		90F23	05/29/90	ND	101	ND	ND
		90G22	06/20/90	ND	97	ND	ND
		90H29	07/18/90	ND	189	ND	ND
		90I25	08/15/90	ND	17	ND	ND
		90J71	09/19/90	ND	129	ND	ND
		90K77	10/17/90	ND	23	ND	ND
		90L91	11/20/90	ND	95	ND	ND
		90M89	12/13/90	ND	23	ND	ND
Milk	5F2	90A51	01/22/90	ND	1250	-	ND
		90B39	02/20/90	ND	1390	-	ND
		90C62	03/20/90	ND	1250	-	ND
		90D80	04/23/90	ND	1520	-	ND
		90F10	05/21/90	ND	1340	-	ND
		90G11	06/18/90	ND	1550	-	ND
		90H06	07/17/90	ND	1480	-	ND
		90I39	08/20/90	ND	1410	-	ND
		90J70	09/17/90	ND	1500	-	ND
		90K88	10/22/90	ND	1450	-	ND
		90L90	11/20/90	ND	1320	-	ND
		90N15	12/18/90	ND	1460	-	ND

TABLE B-1, continued

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
1990 STATE CROSS-CHECK RESULTS

SAMPLE	STATION	SAMPLE NO.	COLLECTION DATE	GAMMA ACTIVITY pCi/L ORIGINAL	K-40 ACTIVITY pCi/L or pCi/kg ORIGINAL	H-3 ACTIVITY pCi/L	I-131 ACTIVITY pCi/L or pCi/kg
Outfall Water	OUT	90C50	01/10-03/14/90	ND	506	ND	-
		90G10	04/11-06/13/90	ND	620	ND	-
		90L09	07/11-09/12/90	ND	426	ND	-
		90N04	10/10-12/13/90	ND	328	ND	-
Surface Water	5S2	90B21	02/14/90	ND	<39	ND	-
		90E43	05/09/90	ND	202	ND	-
		90G96	07/11/90	ND	<7	ND	-
		90L76	11/15/90	ND	97	ND	-
Abalone Meat	DCM	90B91	02/22/90	Co-58: 62±21	3350	-	-
		90G55	06/21/90	ND	9650	-	-
		90I75	08/21/90	ND	5580	-	-
		90M55	11/29/90	Co-60: 25±15	6490	-	-
Bull Kelp* Blade	DCM	90G53	06/21/90	Co-58: 8±2	10000	-	-
		90H20	07/18/90	Co-58: 7±2	11200	-	-

* No sample available in the first and fourth quarter, 1990.

TABLE B-1, continued

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
1990 STATE CROSS-CHECK RESULTS

SAMPLE	STATION	SAMPLE NO.	COLLECTION DATE	GAMMA ACTIVITY** pCi/kg ORIGINAL	K-40 ACTIVITY** pCi/L or pCi/kg ORIGINAL	H-3 ACTIVITY pCi/L	I-131 ACTIVITY pCi/L or pCi/kg
Vegetable Greens	7G1	90B23	02/14/90	ND	3330	-	-
		90E45	05/09/90	ND	4020	-	-
		90J47	09/12/90	ND	4210	-	-
		90L74	11/15/90	ND	5320	-	-
Sediment	DCM	90N78	12/03/90	Cs-137: 15±8 Co-60: 37±11	9410	-	-

** pCi/kg was determined using dry weight for sediment.

ND: Radionuclides of interest (related to power plant operations) other than naturally occurring were not detected.

TABLE B-2

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
MARINE AND TERRESTRIAL SAMPLE DATA
DETECTED NUCLIDES (NONNATURALLY OCCURRING) - pCi/kg ORIGINAL

DESCRIPTION	STA. NO.	COLLECTION DATE	SAM. NO.	58Co	60Co	Mn54	I131	Cs137	OTHER
Black Abalone	DCM	02/21/90	90B52		7.19E1±3.54E1				
Red Abalone	DCM	02/22/90	90B91	6.19E1±2.05E1					
Black Abalone	DCM	11/29/90	90M55		2.51E1±1.50E1				
Black Abalone	PON	08/21/90	90I74		2.52E1±1.24E1				
Iridaea	DCM	05/11/90	90E96	1.46E2±8.41E0	1.33E1±3.63E0	2.54E1±4.12E0			Ag-110m: 1.27E1±3.12E0
Iridaea	DCM	08/21/90	90I72	3.85E1±6.56E0	2.16E1±5.82E0				
Iridaea	DCM	11/29/90	90M54	1.97E1±3.69E0	2.35E1±4.03E0				
Bull Kelp Blade	DCM	06/21/90	90G53	7.28E0±2.35E0					
Bull Kelp Blade	DCM	07/18/90	90H20	6.69E0±2.46E0					
Bull Kelp Pneumatocyst	DCM	06/21/90	90G54	1.41E1±4.07E0					
Commercial Salmon	7D3	02/27/90	90B85					1.76E1±5.49E0	
Commercial Salmon	7D3	05/09/90	90E40					1.12E1±5.85E0	
Commercial Red Snapper	7D3	09/24/90	90J91					8.34E0±4.83E0	
Commercial Cod	7D3	12/31/90	90N79					1.03E1±2.58E0	
Rockfish	POS	08/03/90	90H91					1.20E1±6.57E0	
California Mussels	DCM	02/21/90	90B49	1.12E2±3.91E1	8.18E1±3.10E1				
California Mussels	DCM	05/11/90	90E94	2.10E2±1.76E1	7.62E1±1.54E1	2.55E1±1.30E1			Nb-95: 2.25E1±1.02E1
California Mussels	DCM	08/21/90	90I69		8.97E1±2.41E1				
California Mussels	DCM	11/29/90	90M53		1.26E2±7.15E1				
California Mussels	PON	02/21/90	90B53	9.88E1±4.69E1	8.81E1±2.87E1				
California Mussels	PON	05/11/90	90E97	7.77E1±3.39E1	5.90E1±3.30E1				
California Mussels	PON	08/21/90	99I68		5.64E1±1.78E1				
California Mussels	PON	11/29/90	90M56		3.33E1±1.56E1				
Sediment	DCM	12/03/90	90N78		3.65E1±1.07E1			1.49E1±8.14E0	

TABLE B-3

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 2F2 ($pCi.m^{-3}$) 1ST QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
01/03/90-01/10/90	400.3	01/13/90	.027	.003	
01/10 - 01/17/90	405.8	01/26/90	.012	.002	
01/17 - 01/24/90	399.6	02/02/90	.029	.003	
01/24 - 01/31/90	401.7	02/05/90	.018	.002	
01/31 - 02/07/90	405.1	02/11/90	.003	.001	
02/07 - 02/14/90	403.1	02/18/90	.010	.001	
02/14 - 02/21/90	406.2	03/01/90	.008	.001	
02/21 - 02/28/90	411.3	03/09/90	.028	.003	
02/28 - 03/07/90	399.8	03/18/90	.011	.001	
03/07 - 03/14/90	402.4	03/22/90	.006	.001	
03/14 - 03/21/90	407.8	03/25/90	.013	.002	
03/21 - 03/28/90	403.6	04/06/90	.007	.001	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
01/03/90-03/28/90	05/01/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 2F2 ($pCi.m^{-3}$) 2ND QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
03/28/90-04/04/90	402.8	04/18/90	.021	.002	
04/04 - 04/11/90	400.6	04/19/90	.016	.002	
04/11 - 04/18/90	394.0	04/25/90	.009	.001	
04/18 - 04/25/90	384.9	05/04/90	.004	.001	
04/25 - 05/02/90	388.1	05/06/90	.008	.001	
05/02 - 05/09/90	386.8	05/16/90	.012	.002	
05/09 - 05/16/90	391.3	05/22/90	.008	.001	
05/16 - 05/23/90	389.8	06/14/90	.005	.001	
05/23 - 05/30/90	387.3	06/15/90	.005	.001	
05/30 - 06/06/90	403.2	06/15/90	.007	.001	
06/06 - 06/13/90	402.1	06/23/90	.004	.001	
06/13 - 06/20/90	396.4	06/29/90	.005	.001	
06/20 - 06/27/90	392.9	06/29/90	.005	.001	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
03/28/90-06/27/90	07/18/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 2F2 ($pCi.m^{-3}$) 3RD QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
06/27/90-07/03/90	345.8	07/09/90	.004	.001	
07/03 - 07/06/90	174.1	07/14/90	.004	.002	
07/06 - 07/11/90	280.2	07/25/90	.003	.001	
07/11 - 07/18/90	379.0	07/25/90	.007	.001	
07/18 - 07/25/90	381.9	08/03/90	.006	.001	
07/25 - 08/01/90	382.9	08/11/90	.007	.001	
08/01 - 08/08/90	380.0	08/12/90	.010	.001	
08/08 - 08/15/90	389.0	08/17/90	.007	.001	
08/15 - 08/22/90	371.6	08/31/90	.005	.001	
08/22 - 08/29/90	379.0	09/06/90	.005	.001	
08/29 - 09/05/90	377.3	09/14/90	.005	.001	
09/05 - 09/12/90	376.9	09/21/90	.010	.001	
09/12 - 09/19/90	376.9	10/12/90	.010	.001	
09/19 - 09/26/90	376.3	10/12/90	.018	.002	
09/26 - 10/03/90	373.5	10/19/90	.016	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
06/27/90-10/03/90	11/08/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 2F2 ($pCi.m^{-3}$) 4TH QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
10/03/90-10/10/90	390.4	10/19/90	.023	.002	
10/10 - 10/17/90	396.0	10/26/90	.012	.002	
10/17 - 10/24/90	401.4	11/01/90	.017	.002	
10/24 - 10/31/90	404.0	11/08/90	.016	.002	
10/31 - 11/07/90	397.3	11/12/90	.010	.001	
11/07 - 11/14/90	409.0	11/25/90	.037	.004	
11/14 - 11/21/90	402.7	12/01/90	.018	.002	
11/21 - 11/28/90	405.8	12/07/90	.021	.002	
11/28 - 12/05/90	404.6	12/15/90	.030	.003	
12/05 - 12/12/90	406.5	12/17/90	.047	.005	
12/12 - 12/19/90	399.0	12/27/90	.015	.002	
12/19 - 12/24/90	289.2	12/28/90	.019	.002	
12/24 - 12/28/90	226.3	01/10/91	.059	.006	
12/28 - 01/02/91	299.6	01/11/91	.044	.004	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
10/03/90-01/02/91	01/22/91	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION MT1 ($pCi.m^{-3}$) 1ST QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
01/02/90-01/08/90	376.3	01/12/90	.016	.002	
01/08 - 01/12/90	230.7	01/12/90	.026	.003	
01/12 - 01/18/90	373.3	01/26/90	.005	.001	
01/18 - 01/24/90	346.2	01/28/90	.024	.003	
01/24 - 01/30/90	377.3	02/04/90	.015	.002	
01/30 - 02/05/90	360.6	02/10/90	.007	.001	
02/05 - 02/09/90	243.2	02/16/90	.007	.002	
02/09 - 02/15/90	365.3	03/01/90	.013	.002	
02/15 - 02/21/90	359.4	03/01/90	.010	.001	
02/21 - 02/27/90	378.2	03/09/90	.028	.003	
02/27 - 03/05/90	374.3	03/09/90	.012	.002	
03/05 - 03/09/90	225.6	03/17/90	.007	.002	
03/09 - 03/15/90	388.0	03/22/90	.005	.001	
03/15 - 03/21/90	372.5	03/25/90	.020	.002	
03/21 - 03/27/90	373.9	03/31/90	.007	.001	
03/27 - 04/02/90	362.4	04/06/90	.021	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
01/02/90-04/02/90	05/02/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION MT1 ($pCi.m^{-3}$) 2ND QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
04/02/90-04/06/90	242.8	04/18/90	.028	.003	
04/06 - 04/12/90	385.5	04/19/90	.013	.002	
04/12 - 04/18/90	365.6	04/25/90	.009	.001	
04/18 - 04/24/90	346.0	05/05/90	.004	.001	
04/24 - 04/30/90	364.7	05/05/90	.004	.001	
04/30 - 05/04/90	243.0	05/10/90	.015	.002	
05/04 - 05/10/90	369.4	05/16/90	.009	.001	
05/10 - 05/16/90	369.3	05/22/90	.006	.001	
05/16 - 05/21/90	311.3	05/30/90	.007	.001	
05/21 - 05/25/90	235.9	06/14/90	.006	.001	
05/25 - 05/31/90	200.7	06/15/90	.008	.002	
05/31 - 06/06/90	339.4	06/15/90	.009	.001	
06/06 - 06/12/90	351.1	06/23/90	.005	.001	
06/12 - 06/18/90	333.7	06/23/90	.004	.001	
06/18 - 06/22/90	229.0	06/30/90	.006	.001	
06/22 - 06/28/90	348.4	07/08/90	.007	.001	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
04/02/90-06/28/90	07/18/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION MT1 (pCi.m^{-3}) 3RD QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
06/28/90-07/03/90	300.6	07/09/90	.005	.001	
07/03 - 07/09/90	345.7	07/13/90	.004	.001	
07/09 - 07/13/90	236.5	07/22/90	.006	.001	
07/13 - 07/19/90	359.0	07/25/90	.006	.001	
07/19 - 07/25/90	352.7	08/03/90	.007	.001	
07/25 - 07/31/90	361.1	08/11/90	.007	.001	
07/31 - 08/06/90	365.0	08/11/90	.008	.001	
08/06 - 08/10/90	240.8	08/17/90	.008	.002	
08/10 - 08/16/90	369.9	08/30/90	.005	.001	
08/16 - 08/22/90	364.2	09/05/90	.005	.001	
08/22 - 08/27/90	312.7	09/06/90	.006	.001	
08/27 - 08/31/90	245.3	09/07/90	.006	.001	
08/31 - 09/05/90	299.5	09/14/90	.006	.001	
09/05 - 09/11/90	368.3	09/15/90	.010	.001	
09/11 - 09/17/90	369.3	09/21/90	.012	.002	
09/17 - 09/21/90	254.9	10/12/90	.009	.002	
09/21 - 09/27/90	362.8	10/12/90	.022	.002	
09/27 - 10/03/90	370.4	10/19/90	.018	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
06/28/90-10/03/90	11/08/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION MT1 ($pCi.m^{-3}$) 4TH QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
10/03/90-10/09/90	363.2	10/19/90	.022	.002	
10/09 - 10/15/90	332.8	10/25/90	.021	.002	
10/15 - 10/19/90	238.8	10/26/90	.015	.002	
10/19 - 10/25/90	353.7	11/02/90	.018	.002	
10/25 - 10/31/90	356.7	11/08/90	.016	.002	
10/31 - 11/05/90	292.3	11/12/90	.014	.002	
11/05 - 11/09/90	233.0	11/15/90	.014	.002	
11/09 - 11/15/90	350.4	11/25/90	.031	.003	
11/15 - 11/21/90	349.4	12/01/90	.021	.002	
11/21 - 11/27/90	352.5	12/07/90	.018	.002	
11/27 - 12/03/90	354.8	12/15/90	.025	.003	
12/03 - 12/07/90	250.6	12/16/90	.036	.004	
12/07 - 12/12/90	291.6	12/17/90	.037	.004	
12/12 - 12/17/90	288.7	12/26/90	.016	.002	
12/17 - 12/21/90	238.0	12/28/90	.008	.002	
12/21 - 12/27/90	367.3	01/10/91	.038	.004	
12/27 - 01/02/91	370.5	01/11/91	.044	.004	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
10/03/90-01/02/91	01/24/91	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION OS2 ($pCi.m^{-3}$) 1ST QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
01/02/90-01/08/90	359.4	01/12/90	.012	.002	
01/08 - 01/12/90	240.5	01/19/90	.022	.003	
01/12 - 01/18/90	378.3	01/26/90	.006	.001	
01/18 - 01/24/90	343.2	01/26/90	.023	.003	
01/24 - 01/30/90	366.7	02/05/90	.015	.002	
01/30 - 02/05/90	349.0	02/10/90	.005	.001	
02/05 - 02/09/90	232.9	02/16/90	.007	.002	
02/09 - 02/15/90	348.8	03/01/90	.010	.001	
02/15 - 02/21/90	343.9	03/01/90	.009	.001	
02/21 - 02/27/90	358.1	03/09/90	.025	.003	
02/27 - 03/05/90	359.6	03/09/90	.012	.002	
03/05 - 03/09/90	216.2	03/17/90	.006	.002	
03/09 - 03/15/90	389.1	03/22/90	.005	.001	
03/15 - 03/21/90	362.2	03/25/90	.008	.001	
03/21 - 03/27/90	360.9	03/31/90	.006	.001	
03/27 - 04/02/90	349.8	04/06/90	.018	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
01/02/90-04/02/90	05/03/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION OS2 ($pCi.m^{-3}$) 2ND QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
04/02/90-04/06/90	236.4	04/19/90	.030	.003	
04/06 - 04/12/90	415.5	04/19/90	.014	.002	
04/12 - 04/18/90	395.5	04/25/90	.008	.001	
04/18 - 04/24/90	373.0	05/05/90	.003	.001	
04/24 - 04/30/90	429.6	05/05/90	.006	.001	
04/30 - 05/04/90	264.2	05/11/90	.015	.002	
05/04 - 05/10/90	397.7	05/16/90	.009	.001	
05/10 - 05/16/90	393.3	05/22/90	.006	.001	
05/16 - 05/21/90	339.2	05/30/90	.007	.001	
05/21 - 05/25/90	256.9	06/15/90	.005	.001	
05/25 - 05/31/90	400.0	06/15/90	.006	.001	
05/31 - 06/06/90	434.3	06/15/90	.008	.001	
06/06 - 06/12/90	430.8	06/23/90	.006	.001	
06/12 - 06/18/90	360.0	06/29/90	.004	.001	
06/18 - 06/22/90	250.4	06/30/90	.005	.001	
06/22 - 06/28/90	374.4	07/08/90	.006	.001	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
04/02/90-06/28/90	07/18/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION OS2 (pCi.m^{-3}) 3RD QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
06/28/90-07/03/90	347.2	07/09/90	.005	.001	
07/03 - 07/09/90	379.8	07/13/90	.004	.001	
07/09 - 07/13/90	261.9	07/22/90	.006	.001	
07/13 - 07/19/90	397.0	07/25/90	.007	.001	
07/19 - 07/25/90	386.9	08/03/90	.006	.001	
07/25 - 07/31/90	395.9	08/11/90	.007	.001	
07/31 - 08/06/90	403.3	08/11/90	.009	.001	
08/06 - 08/10/90	261.8	08/17/90	.008	.001	
08/10 - 08/16/90	405.7	08/30/90	.005	.001	
08/16 - 08/22/90	399.6	09/06/90	.004	.001	
08/22 - 08/27/90	364.3	09/07/90	.006	.001	
08/27 - 08/31/90	276.5	09/08/90	.004	.001	
08/31 - 09/05/90	338.5	09/15/90	.007	.001	
09/05 - 09/11/90	406.2	09/15/90	.010	.001	
09/11 - 09/17/90	401.8	09/21/90	.010	.001	
09/17 - 09/21/90	276.8	10/12/90	.009	.002	
09/21 - 09/27/90	396.2	10/12/90	.019	.02	
09/27 - 10/03/90	404.7	10/19/90	.017	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
06/28/90-10/03/90	11/28/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION OS2 ($pCi.m^{-3}$) 4TH QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
10/03/90-10/09/90	412.5	10/19/90	.023	.002	
10/09 - 10/15/90	400.2	10/26/90	.019	.002	
10/15 - 10/19/90	276.5	10/26/90	.014	.002	
10/19 - 10/25/90	408.9	11/02/90	.020	.002	
10/25 - 10/31/90	425.0	11/08/90	.014	.002	
10/31 - 11/05/90	341.7	11/12/90	.014	.002	
11/05 - 11/09/90	272.2	11/16/90	.014	.002	
11/09 - 11/15/90	410.6	11/25/90	.032	.003	
11/15 - 11/21/90	399.4	12/01/90	.013	.002	
11/21 - 11/27/90	402.2	12/07/90	.017	.002	
11/27 - 12/03/90	399.5	12/15/90	.025	.003	
12/03 - 12/07/90	282.7	12/16/90	.036	.004	
12/07 - 12/12/90	326.9	12/17/90	.041	.004	
12/12 - 12/17/90	317.4	12/27/90	.014	.002	
12/17 - 12/21/90	259.2	12/29/90	.008	.002	
12/21 - 12/27/90	398.0	01/10/91	.038	.004	
12/27 - 01/02/91	397.1	01/11/91	.040	.004	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
10/03/90-01/02/91	01/29/91	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 1S1 (pCi.m^{-3}) 1ST QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
01/02/90-01/08/90	378.7	01/13/90	.012	.002	
01/08 - 01/12/90	236.6	01/19/90	.021	.003	
01/12 - 01/18/90	369.2	01/26/90	.005	.001	
01/18 - 01/24/90	337.6	01/28/90	.025	.003	
01/24 - 01/30/90	367.0	02/05/90	.013	.002	
01/30 - 02/05/90	350.1	02/10/90	.004	.001	
02/05 - 02/09/90	236.5	02/16/90	.006	.001	
02/09 - 02/15/90	352.4	03/01/90	.010	.001	
02/15 - 02/21/90	349.4	03/01/90	.008	.001	
02/21 - 02/27/90	365.1	03/09/90	.031	.003	
02/27 - 03/05/90	363.1	03/09/90	.012	.002	
03/05 - 03/09/90	217.6	03/17/90	.008	.002	
03/09 - 03/15/90	375.3	03/22/90	.005	.001	
03/15 - 03/21/90	356.2	03/25/90	.009	.001	
03/21 - 03/27/90	358.7	03/31/90	.014	.002	
03/27 - 04/02/90	347.8	04/07/90	.019	.002	

GAMMA ACTIVITY ON FILTER COMP

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
01/02/90-04/02/90	05/03/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 1S1 ($pCi.m^{-3}$) 2ND QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
04/02/90-04/06/90	233.6	04/19/90	.028	.003	
04/06 - 04/12/90	415.1 3/	04/19/90	.014	.002	
04/12 - 04/18/90	2/				
04/18 - 04/24/90	322.2 3/	05/05/90	.004	.001	
04/24 - 04/30/90	331.7	05/05/90	.006	.001	
04/30 - 05/04/90	220.2	05/11/90	.013	.002	
05/04 - 05/10/90	333.3	05/16/90	.009	.001	
05/10 - 05/16/90	332.0	05/22/90	.006	.001	
05/16 - 05/21/90	281.6	05/30/90	.007	.001	
05/21 - 05/25/90	213.9	06/15/90	.005	.001	
05/25 - 05/31/90	331.2	06/15/90	.006	.001	
05/31 - 06/06/90	335.6	06/15/90	.007	.001	
06/06 - 06/12/90	343.9	06/23/90	.006	.001	
06/12 - 06/18/90	328.1	06/29/90	.004	.001	
06/18 - 06/22/90	225.7	06/30/90	.005	.001	
06/22 - 06/28/90	335.4	07/09/90	.007	.001	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
04/02/90-06/28/90	07/19/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 1S1 (pCi.m^{-3}) 3RD QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
06/28/90-07/03/90	286.6	07/09/90	.005	.001	
07/03 - 07/09/90	343.4	07/13/90	.004	.001	
07/09 - 07/13/90	233.9	07/22/90	.007	.001	
07/13 - 07/19/90	353.5	07/25/90	.006	.001	
07/19 - 07/25/90	346.1	08/03/90	.008	.001	
07/25 - 07/31/90	352.8	08/11/90	.007	.001	
03/31 - 08/06/90	356.9	08/11/90	.008	.001	
08/06 - 08/10/90	234.2	08/17/90	.009	.002	
08/10 - 08/16/90	357.7	08/30/90	.005	.001	
08/16 - 08/22/90	351.7	09/06/90	.005	.001	
08/22 - 08/27/90	300.0	09/07/90	.006	.001	
08/27 - 08/31/90	236.3	09/08/90	.005	.001	
08/31 - 09/05/90	288.9	09/15/90	.006	.001	
09/05 - 09/11/90	348.0	09/15/90	.009	.001	
09/11 - 09/17/90	355.7	09/21/90	.010	.001	
09/17 - 09/21/90	243.5	10/12/90	.010	.002	
09/21 - 09/27/90	346.0	10/12/90	.019	.02	
09/27 - 10/03/90	352.4	10/19/90	.016	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
06/28/90-10/03/90	11/29/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 1S1 (pCi.m^{-3}) 4TH QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
10/03/90-10/09/90	362.8	10/19/90	.023	.002	
10/09 - 10/15/90	355.5	10/26/90	.020	.002	
10/15 - 10/19/90	244.0	10/26/90	.014	.002	
10/19 - 10/25/90	359.0	11/02/90	.023	.002	
10/25 - 10/31/90	361.7	11/08/90	.016	.002	
10/31 - 11/05/90	299.0	11/12/90	.015	.005	
11/05 - 11/09/90	237.8	11/16/90	.013	.002	
11/09 - 11/15/90	362.0	11/25/90	.033	.003	
11/15 - 11/21/90	356.9	12/01/90	.017	.002	
11/21 - 11/27/90	361.6	12/07/90	.016	.002	
11/27 - 12/03/90	361.3	12/15/90	.023	.003	
12/03 - 12/07/90	254.1	12/16/90	.036	.004	
12/07 - 12/12/90	295.5	12/17/90	.040	.004	
12/12 - 12/17/90	290.7	12/27/90	.018	.002	
12/17 - 12/21/90	235.4	12/29/90	.008	.002	
12/21 - 12/27/90	364.1	01/10/91	.037	.004	
12/27 - 01/02/91	369.2	01/11/91	.038	.004	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
10/03/90-01/02/91	01/30/91	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 5F1 ($pCi.m^{-3}$) 1ST QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
01/02/90-01/08/90	387.3	01/12/90	.015	.002	
01/08 - 01/12/90	235.9	01/19/90	.024	.003	
01/12 - 01/18/90	374.7	01/26/90	.005	.001	
01/18 - 01/24/90	399.9	01/28/90	.029	.003	
01/24 - 01/30/90	435.4	02/04/90	.016	.002	
01/30 - 02/05/90	408.7	02/10/90	.005	.001	
02/05 - 02/09/90	274.8	02/16/90	.005	.001	
02/09 - 02/15/90	416.0	03/01/90	.013	.002	
02/15 - 02/21/90	410.3	03/01/90	.010	.001	
02/21 - 02/27/90	425.4	03/09/90	.029	.003	
02/27 - 03/05/90	427.2	03/09/90	.014	.002	
03/05 - 03/09/90	244.8*	03/17/90	<0.001		
03/09 - 03/15/90	437.3	03/22/90	.006	.001	
03/15 - 03/21/90	419.3	03/25/90	.010	.001	
03/21 - 03/27/90	422.6	03/31/90	.008	.001	
03/27 - 04/02/90	399.3	04/06/90	.016	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
01/02/90-04/02/90	04/30/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.
* Filter was off-center in holder.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 5F1 (pCi.m^{-3}) 2ND QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
04/02/90-04/06/90	285.4	04/18/90	.028	.003	
04/06 - 04/12/90	400.9	04/19/90	.014	.002	
04/12 - 04/18/90	378.0	04/25/90	.009	.001	
04/18 - 04/24/90	359.0	05/05/90	.003	.001	
04/24 - 04/30/90	383.8	05/05/90	.007	.001	
04/30 - 05/04/90	255.4	05/11/90	.017	.002	
05/04 - 05/10/90	387.8	05/16/90	.010	.001	
05/10 - 05/16/90	386.4	05/22/90	.006	.001	
05/16 - 05/21/90	327.1	05/30/90	.006	.001	
05/21 - 05/25/90	250.2	06/14/90	.006	.001	
05/25 - 05/31/90	385.1	06/15/90	.005	.001	
05/31 - 06/06/90	397.7	06/15/90	.008	.001	
06/06 - 06/12/90	395.1	06/23/90	.007	.001	
06/12 - 06/18/90	394.0	06/29/90	.004	.001	
06/18 - 06/22/90	262.4	06/30/90	.006	.001	
06/22 - 06/28/90	398.1	07/08/90	.006	.001	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
04/02/90-06/28/90	07/17/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 5F1 ($pCi.m^{-3}$) 3RD QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
06/28/90-07/03/90	315.0	07/09/90	.002	.001	
07/03 - 07/09/90	374.6	07/13/90	.004	.001	
07/09 - 07/13/90	251.3	07/22/90	.006	.001	
07/13 - 07/19/90	376.4	07/25/90	.008	.001	
07/19 - 07/25/90	380.0	08/03/90	.007	.001	
07/25 - 07/31/90	382.8	08/11/90	.008	.001	
07/31 - 08/06/90	387.2	08/11/90	.009	.001	
08/06 - 08/10/90	256.4	08/17/90	.011	.002	
08/10 - 08/16/90	387.1	08/30/90	.006	.001	
08/16 - 08/22/90	398.4	09/05/90	.006	.001	
08/22 - 08/27/90	306.3	09/06/90	.006	.001	
08/27 - 08/31/90	256.5	09/08/90	.007	.001	
08/31 - 09/05/90	323.2	09/14/90	.007	.001	
09/05 - 09/11/90	393.8	09/15/90	.011	.001	
09/11 - 09/17/90	393.9	09/21/90	.012	.002	
09/17 - 09/21/90	277.8	10/12/90	.010	.002	
09/21 - 09/27/90	378.5	10/12/90	.019	.002	
09/27 - 10/03/90	394.2	10/19/90	.017	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
06/28/90-10/03/90	11/05/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 5F1 (pCi.m^{-3}) 4TH QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
10/03/90-10/09/90	380.7	10/19/90	.023	.002	
10/09 - 10/15/90	375.4	10/25/90	.020	.002	
10/15 - 10/19/90	256.1	10/26/90	.014	.002	
10/19 - 10/25/90	377.4	11/02/90	.023	.002	
10/25 - 10/31/90	389.0	11/08/90	.018	.002	
10/31 - 11/05/90	320.7	11/12/90	.015	.002	
11/05 - 11/09/90	255.5	11/15/90	.015	.002	
11/09 - 11/15/90	387.5	11/25/90	.036	.004	
11/15 - 11/21/90	380.4	12/01/90	.023	.002	
11/21 - 11/27/90	377.9	12/07/90	.023	.003	
11/27 - 12/03/90	384.2	12/15/90	.024	.003	
12/03 - 12/07/90	269.3	12/16/90	.034	.004	
12/07 - 12/12/90	303.2	12/17/90	.042	.004	
12/12 - 12/17/90	316.6	12/26/90	.017	.002	
12/17 - 12/21/90	250.9	12/29/90	.008	.002	
12/21 - 12/27/90	381.2	01/10/91	.039	.004	
12/27 - 01/02/91	388.7	01/11/91	.042	.004	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
10/03/90-01/02/91	01/23/91	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 7D1 (pCi.m^{-3}) 1ST QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
01/02/90-01/08/90	391.6	01/12/90	.013	.002	
01/08 - 01/12/90	245.0	01/19/90	.022	.003	
01/12 - 01/18/90	389.4	01/26/90	.006	.001	
01/18 - 01/24/90	368.7	01/28/90	.022	.002	
01/24 - 01/30/90	412.4	02/05/90	.016	.002	
01/30 - 02/05/90	395.5	02/10/90	.005	.001	
02/05 - 02/09/90	265.7	02/18/90	.006	.001	
02/09 - 02/15/90	403.4	03/01/90	.012	.002	
02/15 - 02/21/90	384.5	03/01/90	.009	.001	
02/21 - 02/27/90	418.2	03/09/90	.028	.003	
02/27 - 03/05/90	421.1	03/09/90	.014	.002	
03/05 - 03/09/90	246.4	03/17/90	.006	.002	
03/09 - 03/15/90	411.6*	03/22/90	<0.001		
03/15 - 03/21/90	416.0	03/25/90	.011	.001	
03/21 - 03/27/90	422.0	03/31/90	.007	.001	
03/27 - 04/02/90	404.1	04/07/90	.019	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
01/02/90-04/02/90	04/30/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.
* Filter was off-center in holder.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 7D1 (pCi.m^{-3}) 2ND QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
04/02/90-04/06/90	274.9	04/18/90	.030	.003	
04/06 - 04/12/90	400.2	04/19/90	.013	.002	
04/12 - 04/18/90	385.9	04/25/90	.009	.001	
04/18 - 04/24/90	362.3	05/05/90	.003	.001	
04/24 - 04/30/90	387.0	05/05/90	.006	.001	
04/30 - 05/04/90	256.1	05/11/90	.015	.002	
05/04 - 05/10/90	389.3	05/16/90	.010	.001	
05/10 - 05/16/90	386.2	05/22/90	.006	.001	
05/16 - 05/21/90	328.7	05/30/90	.006	.001	
05/21 - 05/25/90	250.3	06/14/90	.006	.001	
05/25 - 05/31/90	383.2	06/15/90	.005	.001	
05/31 - 06/06/90	389.2	06/15/90	.008	.001	
06/06 - 06/12/90	393.0	06/23/90	.006	.001	
06/12 - 06/18/90	373.0	06/29/90	.004	.001	
06/18 - 06/22/90	255.6	06/30/90	.005	.001	
06/22 - 06/28/90	378.7	07/08/90	.007	.001	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
04/02/90-06/28/90	07/17/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 7D1 (pCi.m^{-3}) 3RD QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
06/28/90-07/03/90	326.4	07/09/90	.004	.001	
07/03 - 07/09/90	363.3	07/13/90	.004	.001	
07/09 - 07/13/90	249.0	07/22/90	.006	.001	
07/13 - 07/19/90	373.2	07/25/90	.007	.001	
07/19 - 07/25/90	372.9	08/03/90	.007	.001	
07/25 - 07/31/90	372.2	08/11/90	.008	.001	
07/31 - 08/06/90	370.3	08/11/90	.010	.001	
08/06 - 08/10/90	241.6	08/17/90	.005	.001	
08/10 - 08/16/90	368.4	08/30/90	.007	.001	
08/16 - 08/22/90	363.8	09/05/90	.005	.001	
08/22 - 08/27/90	298.7	09/06/90	.006	.001	
08/27 - 08/31/90	246.5	09/08/90	.007	.001	
08/31 - 09/05/90	305.2	09/15/90	.007	.001	
09/05 - 09/11/90	373.8	09/15/90	.010	.001	
09/11 - 09/17/90	381.2	09/21/90	.010	.001	
09/17 - 09/21/90	262.5	10/12/90	.010	.002	
09/21 - 09/27/90	361.6	10/12/90	.022	.002	
09/27 - 10/03/90	370.7	10/19/90	.019	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
06/28/90-10/03/90	11/05/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 7D1 ($pCi.m^{-3}$) 4TH QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
10/03/90-10/09/90	369.3	10/19/90	.024	.003	
10/09 - 10/15/90	368.8	10/26/90	.021	.002	
10/15 - 10/19/90	255.7	10/26/90	.017	.002	
10/19 - 10/25/90	383.3	11/02/90	.023	.002	
10/25 - 10/31/90	374.2	11/08/90	.020	.002	
10/31 - 11/05/90	308.8	11/12/90	.012	.002	
11/05 - 11/09/90	250.4	11/15/90	.015	.002	
11/09 - 11/15/90	380.2	11/25/90	.030	.003	
11/15 - 11/21/90	378.6	12/01/90	.019	.002	
11/21 - 11/27/90	380.0	12/07/90	.020	.002	
11/27 - 12/03/90	380.2	12/15/90	.027	.003	
12/03 - 12/07/90	270.9	12/16/90	.035	.004	
12/07 - 12/12/90	315.8	12/17/90	.040	.004	
12/12 - 12/17/90	303.8	12/26/90	.016	.002	
12/17 - 12/21/90	247.5	12/29/90	.008	.002	
12/21 - 12/27/90	377.8	01/10/91	.040	.004	
12/27 - 01/02/91 3/	324.7	01/11/91	.044	.004	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
10/03/90-01/02/91	01/23/91	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 8S1 (pCi.m^{-3}) 1ST QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
01/02/90-01/08/90	326.9	01/12/90	.015	.002	
01/08 - 01/12/90	220.8	01/19/90	.018	.003	
01/12 - 01/18/90 3/	133.0	01/26/90	.005	.002	
01/18 - 01/24/90 3/	151.9	01/26/90	.023	.003	
01/24 - 01/30/90	310.4	02/05/90	.018	.002	
01/30 - 02/05/90	300.3	02/10/90	.005	.001	
02/05 - 02/09/90	153.8	02/16/90	.006	.002	
02/09 - 02/15/90	298.6	03/01/90	.013	.002	
02/15 - 02/21/90	294.1	03/01/90	.012	.002	
02/21 - 02/27/90	306.3	03/09/90	.028	.003	
02/27 - 03/05/90	306.4	03/09/90	.013	.002	
03/05 - 03/09/90	183.3	03/17/90	.005	.002	
03/09 - 03/15/90	313.9	03/22/90	.006	.001	
03/15 - 03/21/90	298.8	03/25/90	.011	.002	
03/21 - 03/27/90	308.3	03/31/90	.006	.001	
03/27 - 04/02/90	379.5	04/07/90	.017	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
01/02/90-04/02/90	05/02/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 8S1 (pCi.m^{-3}) 2ND QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
04/02/90-04/06/90	259.1	04/18/90	.028	.003	
04/06 - 04/12/90	423.9	04/19/90	.011	.002	
04/12 - 04/18/90	407.6	04/25/90	.009	.001	
04/18 - 04/24/90	382.3	05/05/90	.003	.001	
04/24 - 04/30/90	406.8	05/05/90	.006	.001	
04/30 - 05/04/90	269.0	05/11/90	.012	.002	
05/04 - 05/10/90	405.3	05/16/90	.008	.001	
05/10 - 05/16/90	406.2	05/22/90	.005	.001	
05/16 - 05/21/90	343.3	05/30/90	.005	.001	
05/21 - 05/25/90	260.9	06/15/90	.005	.001	
05/25 - 05/31/90	403.1	06/15/90	.005	.001	
05/31 - 06/06/90	410.9	06/15/90	.006	.001	
06/06 - 06/12/90	419.1	06/23/90	.006	.001	
06/12 - 06/18/90	388.4	06/29/90	.004	.001	
06/18 - 06/22/90	270.1	06/30/90	.006	.001	
06/22 - 06/28/90	403.5	07/08/90	.005	.001	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
04/02/90-06/28/90	07/18/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 8S1 (pCi.m^{-3}) 3RD QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
06/28/90-07/03/90	343.8	07/09/90	.004	.001	
07/03 - 07/09/90	395.8	07/13/90	.004	.001	
07/09 - 07/13/90	268.6	07/22/90	.006	.001	
07/13 - 07/19/90	403.0	07/25/90	.005	.001	
07/19 - 07/25/90	397.7	08/03/90	.006	.001	
07/25 - 07/31/90	403.1	08/11/90	.007	.001	
07/31 - 08/06/90	402.3	08/11/90	.010	.001	
08/06 - 08/10/90	262.7	08/17/90	.007	.001	
08/10 - 08/16/90	406.8	08/30/90	.005	.001	
08/16 - 08/22/90	402.3	09/05/90	.005	.001	
08/22 - 08/27/90	333.6	09/06/90	.005	.001	
08/27 - 08/31/90	263.0	09/08/90	.006	.001	
08/31 - 09/05/90	323.1	09/15/90	.005	.001	
09/05 - 09/11/90	394.8	09/15/90	.009	.001	
09/11 - 09/17/90	401.1	09/21/90	.010	.001	
09/17 - 09/21/90	276.5	10/12/90	.009	.002	
09/21 - 09/27/90	390.0	10/12/90	.020	.002	
09/27 - 10/03/90	395.8	10/19/90	.016	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
06/28/90-10/03/90	11/27/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 8S1 (pCi.m^{-3}) 4TH QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
10/03/90-10/09/90	402.2	10/19/90	.022	.002	
10/09 - 10/15/90	398.4	10/26/90	.017	.002	
10/15 - 10/19/90	271.6	10/26/90	.013	.002	
10/19 - 10/25/90	402.9	11/02/90	.018	.002	
10/25 - 10/31/90	412.2	11/08/90	.013	.002	
10/31 - 11/05/90	336.8	11/12/90	.013	.002	
11/05 - 11/09/90	266.9	11/15/90	.014	.002	
11/09 - 11/15/90	406.8	11/25/90	.027	.003	
11/15 - 11/21/90	404.4	12/01/90	.018	.002	
11/21 - 11/27/90	405.4	12/07/90	.019	.002	
11/27 - 12/03/90	411.9	12/15/90	.019	.002	
12/03 - 12/07/90	287.2	12/16/90	.030	.003	
12/07 - 12/12/90	330.7	12/17/90	.034	.003	
12/12 - 12/17/90	323.0	12/26/90	.013	.002	
12/17 - 12/21/90	264.1	12/29/90	.007	.001	
12/21 - 12/27/90	401.1	01/10/91	.033	.003	
12/27 - 01/02/91	404.2	01/11/91	.030	.003	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
10/03/90-01/02/91	01/24/91	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 8S2 (pCi.m^{-3}) 1ST QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
01/02/90-01/08/90	403.4	01/12/90	.013	.002	
01/08 - 01/12/90	247.6	01/19/90	.020	.003	
01/12 - 01/18/90	404.7	01/26/90	.005	.001	
01/18 - 01/24/90	374.5	01/28/90	.025	.003	
01/24 - 01/30/90	411.0	02/04/90	.014	.002	
01/30 - 02/05/90	387.9	02/10/90	.004	.001	
02/05 - 02/09/90	260.5	02/16/90	.006	.001	
02/09 - 02/15/90	391.8	03/01/90	.011	.001	
02/15 - 02/21/90	385.9	03/10/90	.010	.001	
02/21 - 02/27/90	404.3	03/09/90	.026	.003	
02/27 - 03/05/90	404.9	03/09/90	.012	.002	
03/05 - 03/09/90	241.3	03/17/90	.007	.002	
03/09 - 03/15/90	416.5	03/22/90	.006	.001	
03/15 - 03/21/90	398.1	03/25/90	.009	.001	
03/21 - 03/27/90	398.4	03/31/90	.006	.001	
03/27 - 04/02/90	385.9	04/07/90	.019	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
01/02/90-04/02/90	05/02/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 8S2 (pCi.m^{-3}) 2ND QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
04/02/90-04/06/90	257.5	04/18/90	.027	.003	
04/06 - 04/12/90	390.4	04/19/90	.015	.002	
04/12 - 04/18/90	371.7	04/25/90	.008	.001	
04/18 - 04/24/90	347.8	05/04/90	.003	.001	
04/24 - 04/30/90	368.5	05/05/90	.005	.001	
04/30 - 05/04/90	244.9	05/11/90	.015	.002	
05/04 - 05/10/90	372.2	05/16/90	.009	.001	
05/10 - 05/16/90	369.8	05/22/90	.005	.001	
05/16 - 05/21/90	313.9	05/30/90	.006	.001	
05/21 - 05/25/90	237.2	06/15/90	.007	.001	
05/25 - 05/31/90	363.4	06/15/90	.005	.001	
05/31 - 06/06/90	370.1	06/15/90	.008	.001	
06/06 - 06/12/90	375.1	06/23/90	.005	.001	
06/12 - 06/18/90	352.3	06/29/90	.004	.001	
06/18 - 06/22/90	243.8	06/30/90	.005	.001	
06/22 - 06/28/90	361.0	07/08/90	.006	.001	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
04/02/90-06/28/90	07/18/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 8S2 ($pCi.m^{-3}$) 3RD QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
06/28/90-07/03/90	309.8	07/09/90	.004	.001	
07/03 - 07/09/90	380.2	07/13/90	.004	.001	
07/09 - 07/13/90	243.1	07/22/90	.005	.001	
07/13 - 07/19/90	364.6	07/25/90	.005	.001	
07/19 - 07/25/90	360.0	08/03/90	.007	.001	
07/25 - 07/31/90	364.0	08/11/90	.008	.001	
07/31 - 08/06/90	366.6	08/11/90	.010	.001	
08/06 - 08/10/90	240.5	08/17/90	.008	.001	
08/10 - 08/16/90	366.8	08/30/90	.007	.001	
08/16 - 08/22/90	378.9	09/06/90	.006	.001	
08/22 - 08/27/90	300.3	09/07/90	.006	.001	
08/27 - 08/31/90	241.0	09/08/90	.005	.001	
08/31 - 09/05/90	297.7	09/15/90	.006	.001	
09/05 - 09/11/90	362.7	09/15/90	.010	.001	
09/11 - 09/17/90	368.8	09/21/90	.009	.001	
09/17 - 09/21/90	252.3	10/12/90	.010	.002	
09/21 - 09/27/90	355.6	10/12/90	.021	.002	
09/27 - 10/03/90	362.4	10/19/90	.018	.002	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION ($pCi.m^{-3}$)
06/28/90-10/03/90	11/27/90	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-3 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
AIRBORNE RADIOACTIVITY
STATION 8S2 (pCi.m^{-3}) 4TH QUARTER

COLLECTION PERIOD	VOLUME (m^3)	COUNTING DATE	GROSS BETA ACTIVITY	2SIGMA	GAMMA SCAN 1/ I-131
10/03/90-10/09/90	371.3	10/19/90	.024	.002	
10/09 - 10/15/90	360.0	10/26/90	.020	.002	
10/15 - 10/19/90	248.2	10/26/90	.015	.002	
10/19 - 10/25/90	364.6	11/02/90	.023	.002	
10/25 - 10/31/90	367.4	11/08/90	.014	.002	
10/31 - 11/05/90	308.3	11/12/90	.016	.002	
11/05 - 11/09/90	243.2	11/15/90	.015	.002	
11/09 - 11/15/90	371.4	11/25/90	.032	.003	
11/15 - 11/21/90	363.7	12/01/90	.018	.002	
11/21 - 11/27/90	367.3	12/07/90	.018	.002	
11/27 - 12/03/90	373.9	12/15/90	.023	.003	
12/03 - 12/07/90	263.7	12/16/90	.035	.004	
12/07 - 12/12/90	305.7	12/17/90	.041	.004	
12/12 - 12/17/90	294.4	12/26/90	.017	.002	
12/17 - 12/21/90	240.5	12/27/90	.008	.002	
12/21 - 12/27/90	369.5	01/10/91	.043	.004	
12/27 - 01/02/91	371.5	01/11/91	.041	.004	

GAMMA ACTIVITY ON FILTER COMPOSITES

COLLECTION PERIOD	COUNTING DATE	NUCLIDE	CONCENTRATION (pCi.m^{-3})
10/03/90-01/02/91	01/25/91	ND	

1/ Unless specified, Iodine-131 was not detected.
2/ No sample collected due to equipment failure.
3/ Time lost due to equipment failure.
4/ Power outage/failure occurred during collection period.
5/ Electrical problem.
ND: Radionuclides of interest other than naturally occurring were not detected.

TABLE B-4

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
ENVIRONMENTAL DOSIMETRY

Station	Quarterly Totals (mR) 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Total	Average	±2σ
MT1	22.4	26.3	20.1	21.1	89.9	22.5	5.4
WN1	14.3	17.9	12.7	13.5	58.4	14.6	4.6
0S1	22.7	26.0	20.6	20.4	89.7	22.4	5.2
5S1	26.1	29.1	23.1	23.8	102.1	25.5	5.4
6S1	17.0	18.8	13.7	13.7	63.2	15.8	5.1
8S1	19.6	20.8	16.3	16.8	73.5	18.4	4.3
8S2	24.3	26.9	19.9	20.0	91.1	22.8	6.9
5S3	21.0	25.1	19.0	19.4	84.5	21.1	5.6
2F2	16.5	17.8	13.2	13.0	60.5	15.1	4.8
2D1	15.8	15.0	11.7	12.3	54.8	13.7	4.0
4D1	15.6	15.9	12.0	15.1	58.6	14.7	3.6
5F1	20.5	22.1	16.1	19.6	78.3	19.6	5.1
1A1	15.4	17.4	13.4	12.0	58.2	14.6	4.7
7D2	20.5	22.4	15.9	17.5	76.3	19.1	5.8
7G2	21.2	21.2	15.7	17.8	75.9	19.0	5.4
7C1	21.7	23.1	16.6	19.0	80.4	20.1	5.8
7F1	23.6	22.4	15.1	17.6	78.7	19.7	8.0
0B1	14.1	15.8	9.0	11.1	50.0	12.5	6.1
7D1	14.8	17.2	10.6	12.5	55.1	13.8	5.7
4C1	13.5	16.2	9.4	11.5	50.6	12.7	5.8
0S2	19.3	22.1	16.0	17.3	74.7	18.7	5.3
1S1	19.2	21.7	15.5	17.3	73.7	18.4	5.3
2S1	19.0	23.3	15.9	17.6	75.8	19.0	6.3
3S1	22.9	26.2	19.4	21.1	89.6	22.4	5.8
4S1	21.5	24.4	16.8	19.5	82.2	20.6	6.4
7S1	20.7	23.6	16.5	18.8	79.6	19.9	6.0
9S1	24.9	26.7	20.0	22.9	94.5	23.6	5.7
1C1	16.7	17.7	12.0	14.3	60.7	15.2	5.1
5C1	20.3	21.3	16.2	18.4	76.2	19.1	4.5
3D1	15.2	17.1	11.7	13.7	57.7	14.4	4.6
6D1	18.5	18.8	14.5	17.6	69.4	17.4	3.9
5F3	21.4	23.2	16.7	19.2	80.5	20.1	5.6

* The exposure (mR) has been normalized for a standard quarter (i.e. for a 90-day period).

TABLE B-5

LAND USE CENSUS

DISTANCE IN MILES FROM THE UNIT 1 CENTER LINE TO THE NEAREST MILK ANIMAL, RESIDENCE, VEGETABLE GARDEN

22½ Degree[1/] Radial Sector	Nearest Milk Animal	Nearest Residence km (mi)	Residence Azimuth Degree	Nearest Vegetable Garden km (mi)
NW	None	5.95 (3.7)	326	None
NNW	None	2.50 (1.55)	333	None
N	None	None	---	None
NNE	None	5.30 (3.3)	018.5	None
NE	None	8.15 (5.06)	037	None
ENE	None	7.15 (4.44)	062.5	None
E	None	7.25 (4.5)	096.5	None
ESE	None	None	---	3.3 (2)[2/]
SE	None	None	---	None

1/ Sectors not shown contain no land beyond the site boundary, other than islets not used for the purposes indicated in this table.
2/ The vegetable garden indicated is the farm along the site access road.

TABLE B-6

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
LIST OF MARINE AND TERRESTRIAL SAMPLES
COLLECTED AND ANALYZED

SAMPLE NO.	DESCRIPTION	STATION NO.	COLLECTION DATE
90A13	COLLARD GREENS	5F2	01/10/90
90A15	SURFACE WATER	5S2	01/10/90
90A11	GREEN PEAS	7C1	01/10/90
90A12	LETTUCE	7G1	01/10/90
90A14	OUTFALL WATER	OUT	01/10/90
90A36	BULL KELP BLADE	7C2	01/17/90
90A37	BULL KELP PNEUMATOCYST	7C2	01/17/90
90A35	SEAWATER	7C2	01/17/90
90A39	SEAWATER	DCM	01/17/90
90A31	DRINKING WATER	DW1	01/17/90
90C50	OUTFALL COMPOSITE	OUT	01/17/90
90A38	SEAWATER	PON	01/17/90
90A33	BULL KELP BLADE	POS	01/17/90
90A34	BULL KELP PNEUMATOCYST	POS	01/17/90
90A32	SEAWATER	POS	01/17/90
90A49	BULL KELP BLADE	PON	01/18/90
90A50	BULL KELP PNEUMATOCYST	PON	01/18/90
90A51	MILK	5F2	01/22/90
90B24	COLLARD GREENS	5F2	02/14/90
90B21	SURFACE WATER	5S2	02/14/90
90B22	SNOW PEAS	7C1	02/14/90
90B23	LETTUCE	7G1	02/14/90
90B20	OUTFALL WATER	OUT	02/14/90
90B39	MILK	5F2	02/20/90
90B58	BLACK ABALONE	7C2	02/21/90
90B51	CALIFORNIA MUSSELS	7C2	02/21/90
90B56	IRIDAEA	7C2	02/21/90
90B52	BLACK ABALONE	DCM	02/21/90
90B49	CALIFORNIA MUSSELS	DCM	02/21/90
90B48	DRINKING WATER	DW1	02/21/90
90B54	BLACK ABALONE	PON	02/21/90
90B53	CALIFORNIA MUSSELS	PON	02/21/90
90B50	BLACK ABALONE	POS	02/21/90
90B55	CALIFORNIA MUSSELS	POS	02/21/90
90B75	BULL KELP BLADE	7C2	02/22/90
90B76	BULL KELP PNEUMATOCYST	7C2	02/22/90
90B77	SEAWATER	7C2	02/22/90
90B78	PERCH	DCM	02/22/90
90B91	RED ABALONE	DCM	02/22/90
90B79	ROCKFISH	DCM	02/22/90
90B74	SEAWATER	DCM	02/22/90
90B89	BULL KELP BLADE	PON	02/22/90
90B90	BULL KELP PNEUMATOCYST	PON	02/22/90
90B87	PERCH	PON	02/22/90
90B88	ROCKFISH	PON	02/22/90

TABLE B-6 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
LIST OF MARINE AND TERRESTRIAL SAMPLES
COLLECTED AND ANALYZED

SAMPLE NO.	DESCRIPTION	STATION NO.	COLLECTION DATE
90B86	SEAWATER	PON	02/22/90
90B83	BULL KELP BLADE	POS	02/22/90
90B84	BULL KELP PNEUMATOCYST	POS	02/22/90
90B80	RED ABALONE	POS	02/22/90
90B81	ROCKFISH	POS	02/22/90
90B82	SEAWATER	POS	02/22/90
90B85	COMMERCIAL SALMON	7D3	02/27/90
90C77	RED ABALONE	PON	02/28/90
90C78	PERCH	POS	02/28/90
90C80	PERCH	7C2	03/07/90
90C79	RED ABALONE	7C2	03/07/90
90C38	LETTUCE	5F2	03/14/90
90C40	SURFACE WATER	5S2	03/14/90
90C36	SNOW PEAS	7C1	03/14/90
90C37	CAULIFLOWER GREENS	7G1	03/14/90
90C39	OUTFALL WATER	OUT	03/14/90
90C81	COMMERCIAL ROCK COD	7D3	03/15/90
90C62	MILK	5F2	03/20/90
90C96	SEAWATER	7C2	03/28/90
90C97	SEAWATER	DCM	03/28/90
90C95	DRINKING WATER	DW1	03/28/90
90C94	SEAWATER	PON	03/28/90
90C93	SEAWATER	POS	03/28/90
90D22	BULL KELP BLADE	7C2	03/30/90
90D23	BULL KELP PNEUMATOCYST	7C2	03/30/90
90D18	BULL KELP BLADE	PON	03/30/90
90D19	BULL KELP PNEUMATOCYST	PON	03/30/90
90D20	BULL KELP BLADE	POS	03/30/90
90D21	BULL KELP PNEUMATOCYST	POS	03/30/90
90D44	LETTUCE	5F2	04/11/90
90D46	SURFACE WATER	5S2	04/11/90
90D42	SNOW PEAS	7C1	04/11/90
90D43	LETTUCE	7G1	04/11/90
90G10	OUTFALL COMPOSITE	OUT	04/11/90
90D45	OUTFALL WATER	OUT	04/11/90
90D80	MILK	5F2	04/23/90
90E18	BULL KELP PNEUMATOCYST	7C2	04/26/90
90E16	SEAWATER	7C2	04/26/90
90E14	SEAWATER	DCM	04/26/90
90E13	SEAWATER	PON	04/26/90
90E15	SEAWATER	POS	04/26/90
90E12	DRINKING WATER	DW1	04/30/90
90E46	BROCCOLI GREENS	5F2	05/09/90
90E43	SURFACE WATER	5S2	05/09/90
90E44	SNOW PEAS	7C1	05/09/90

TABLE B-6 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
LIST OF MARINE AND TERRESTRIAL SAMPLES
COLLECTED AND ANALYZED

SAMPLE NO.	DESCRIPTION	STATION NO.	COLLECTION DATE
90E40	COMMERCIAL SALMON	7D3	05/09/90
90E41	COMMERCIAL SNAPPER	7D3	05/09/90
90E45	LETTUCE	7G1	05/09/90
90E42	OUTFALL WATER	OUT	05/09/90
90E92	BLACK ABALONE	7C2	05/11/90
90E91	CALIFORNIA MUSSELS	7C2	05/11/90
90E93	IRIDAEA	7C2	05/11/90
90E95	BLACK ABALONE	DCM	05/11/90
90E94	CALIFORNIA MUSSELS	DCM	05/11/90
90E96	IRIDAEA	DCM	05/11/90
90E98	BLACK ABALONE	PON	05/11/90
90E97	CALIFORNIA MUSSELS	PON	05/11/90
90E90	BLACK ABALONE	POS	05/11/90
90E89	CALIFORNIA MUSSELS	POS	05/11/90
90F10	MILK	5F2	05/21/90
90F25	BULL KELP PNEUMATOCYST	7C2	05/22/90
90F26	SEAWATER	7C2	05/22/90
90F28	SEAWATER	DCM	05/22/90
90F29	SEAWATER	PON	05/22/90
90F27	SEAWATER	POS	05/22/90
90F23	DRINKING WATER	DW1	05/29/90
90F98	LETTUCE	5F2	06/13/90
90G09	SURFACE WATER	5S2	06/13/90
90F96	SNOW PEAS	7C1	06/13/90
90F97	LETTUCE	7G1	06/13/90
90G08	OUTFALL WATER	OUT	06/13/90
90G20	BULL KELP BLADE	7C2	06/14/90
90G21	BULL KELP PNEUMATOCYST	7C2	06/14/90
90G26	PERCH	7C2	06/14/90
90G27	ROCKFISH	7C2	06/14/90
90G19	SEAWATER	7C2	06/14/90
90G15	SEAWATER	DCM	06/14/90
90G14	SEAWATER	PON	06/14/90
90G17	BULL KELP BLADE	POS	06/14/90
90G18	BULL KELP PNEUMATOCYST	POS	06/14/90
90G24	PERCH	POS	06/14/90
90G23	RED ABALONE	POS	06/14/90
90G25	ROCKFISH	POS	06/14/90
90G16	SEAWATER	POS	06/14/90
90G11	MILK	5F2	06/18/90
90G22	DRINKING WATER	DW1	06/20/90
90G53	BULL KELP BLADE	DCM	06/21/90
90G54	BULL KELP PNEUMATOCYST	DCM	06/21/90
90G56	PERCH	DCM	06/21/90
90G55	RED ABALONE	DCM	06/21/90

TABLE B-6 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
LIST OF MARINE AND TERRESTRIAL SAMPLES
COLLECTED AND ANALYZED

SAMPLE NO.	DESCRIPTION	STATION NO.	COLLECTION DATE
90G57	ROCKFISH	DCM	06/21/90
90G48	BULL KELP BLADE	PON	06/21/90
90G49	BULL KELP PNEUMATOCYST	PON	06/21/90
90G51	PERCH	PON	06/21/90
90G50	RED ABALONE	PON	06/21/90
90G52	ROCKFISH	PON	06/21/90
90L09	OUTFALL COMPOSITE	OUT	07/01/90
90G94	CAULIFLOWER GREENS	5F2	07/11/90
90G96	SURFACE WATER	5S2	07/11/90
90G92	SNOW PEAS	7C1	07/11/90
90G95	OUTFALL WATER	OUT	07/11/90
90H06	MILK	5F2	07/17/90
90H26	BULL KELP BLADE	7C2	07/18/90
90H27	BULL KELP PNEUMATOCYST	7C2	07/18/90
90H28	SEAWATER	7C2	07/18/90
90H20	BULL KELP BLADE	DCM	07/18/90
90H21	BULL KELP PNEUMATOCYST	DCM	07/18/90
90H22	SEAWATER	DCM	07/18/90
90H29	DRINKING WATER	DW1	07/18/90
90H17	BULL KELP BLADE	PON	07/18/90
90H18	BULL KELP PNEUMATOCYST	PON	07/18/90
90H19	SEAWATER	PON	07/18/90
90H23	BULL KELP BLADE	POS	07/18/90
90H24	BULL KELP PNEUMATOCYST	POS	07/18/90
90H25	SEAWATER	POS	07/18/90
90H97	PERCH	7C2	08/03/90
90H98	RED ABALONE	7C2	08/03/90
90H99	ROCKFISH	7C2	08/03/90
90H95	PERCH	DCM	08/03/90
90H96	RED ABALONE	DCM	08/03/90
90H94	ROCKFISH	DCM	08/03/90
90H92	PERCH	POS	08/03/90
90H93	RED ABALONE	POS	08/03/90
90H91	ROCKFISH	POS	08/03/90
90I00	PERCH	PON	08/07/90
90I01	RED ABALONE	PON	08/07/90
90I02	ROCKFISH	PON	08/07/90
90I03	SQUASH GREENS	5F2	08/08/90
90I06	SURFACE WATER	5S2	08/08/90
90I04	SNOW PEAS	7C1	08/08/90
90I05	OUTFALL WATER	OUT	08/08/90
90I84	BULL KELP BLADE	7C2	08/15/90
90I85	BULL KELP PNEUMATOCYST	7C2	08/15/90
90I29	SEAWATER	7C2	08/15/90
90I81	BULL KELP PNEUMATOCYST	DCM	08/15/90

TABLE B-6 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
LIST OF MARINE AND TERRESTRIAL SAMPLES
COLLECTED AND ANALYZED

SAMPLE NO.	DESCRIPTION	STATION NO.	COLLECTION DATE
90I28	SEAWATER	DCM	08/15/90
90I25	DRINKING WATER	DW1	08/15/90
90I78	BULL KELP BLADE	PON	08/15/90
90I79	BULL KELP PNEUMATOCYST	PON	08/15/90
90I27	SEAWATER	PON	08/15/90
90I82	BULL KELP BLADE	POS	08/15/90
90I83	BULL KELP PNEUMATOCYST	POS	08/15/90
90I26	SEAWATER	POS	08/15/90
90I39	MILK	5F2	08/20/90
90I77	BLACK ABALONE	7C2	08/21/90
90I71	CALIFORNIA MUSSELS	7C2	08/21/90
90I73	IRIDAEA	7C2	08/21/90
90I75	BLACK ABALONE	DCM	08/21/90
90I69	CALIFORNIA MUSSELS	DCM	08/21/90
90I72	IRIDAEA	DCM	08/21/90
90I74	BLACK ABALONE	PON	08/21/90
90I68	CALIFORNIA MUSSELS	PON	08/21/90
90I76	BLACK ABALONE	POS	08/22/90
90I70	CALIFORNIA MUSSELS	POS	08/22/90
90J13	CELERY GREENS	7G1	08/31/90
90J48	PUMPKIN GREENS	5F2	09/12/90
90J50	SURFACE WATER	5S2	09/12/90
90J46	SNOW PEAS	7C1	09/12/90
90J47	CELERY GREENS	7G1	09/12/90
90J49	OUTFALL WATER	OUT	09/12/90
90J70	MILK	5F2	09/17/90
90J89	BULL KELP BLADE	7C2	09/19/90
90J90	BULL KELP PNEUMATOCYST	7C2	09/19/90
90J88	SEAWATER	7C2	09/19/90
90J95	SEAWATER	DCM	09/19/90
90J71	DRINKING WATER	DW1	09/19/90
90J93	BULL KELP BLADE	PON	09/19/90
90J94	BULL KELP PNEUMATOCYST	PON	09/19/90
90J92	SEAWATER	PON	09/19/90
90J97	BULL KELP BLADE	POS	09/19/90
90J98	BULL KELP PNEUMATOCYST	POS	09/19/90
90J96	SEAWATER	POS	09/19/90
90J91	COMMERCIAL RED SNAPPER	7D3	09/24/90
90K48	PUMPKIN GREENS	5F2	10/10/90
90K45	SURFACE WATER	5S2	10/10/90
90K46	SNOW PEAS	7C1	10/10/90
90K47	CELERY GREENS	7G1	10/10/90
90N04	OUTFALL COMPOSITE	OUT	10/10/90
90K44	OUTFALL WATER	OUT	10/10/90
90K83	BULL KELP BLADE	7C2	10/16/90

TABLE B-6 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
LIST OF MARINE AND TERRESTRIAL SAMPLES
COLLECTED AND ANALYZED

SAMPLE NO.	DESCRIPTION	STATION NO.	COLLECTION DATE
90K84	BULL KELP PNEUMATOCYST	7C2	10/16/90
90K85	SEAWATER	7C2	10/16/90
90K80	SEAWATER	DCM	10/16/90
90K78	BULL KELP BLADE	PON	10/16/90
90K79	BULL KELP PNEUMATOCYST	PON	10/16/90
90K86	SEAWATER	PON	10/16/90
90K81	BULL KELP BLADE	POS	10/16/90
90K82	BULL KELP PNEUMATOCYST	POS	10/16/90
90K87	SEAWATER	POS	10/16/90
90K77	DRINKING WATER	DW1	10/17/90
90K88	MILK	5F2	10/22/90
90L72	CAULIFLOWER GREENS	5F2	11/15/90
90L76	SURFACE WATER	5S2	11/15/90
90L73	SNOW PEAS	7C1	11/15/90
90L86	BULL KELP BLADE	7C2	11/15/90
90L87	BULL KELP PNEUMATOCYST	7C2	11/15/90
90L80	SEAWATER	7C2	11/15/90
90L74	LETTUCE	7G1	11/15/90
90L78	SEAWATER	DCM	11/15/90
90L75	OUTFALL WATER	OUT	11/15/90
90L81	BULL KELP BLADE	PON	11/15/90
90L82	BULL KELP PNEUMATOCYST	PON	11/15/90
90L77	SEAWATER	PON	11/15/90
90L84	BULL KELP BLADE	POS	11/15/90
90L85	BULL KELP PNEUMATOCYST	POS	11/15/90
90L79	SEAWATER	POS	11/15/90
90L90	MILK	5F2	11/20/90
90L91	DRINKING WATER	DW1	11/20/90
90M08	PERCH	DCM	11/21/90
90M05	RED ABALONE	DCM	11/21/90
90M11	ROCKFISH	DCM	11/21/90
90M07	PERCH	PON	11/21/90
90M04	RED ABALONE	PON	11/21/90
90M10	ROCKFISH	PON	11/21/90
90M09	PERCH	POS	11/21/90
90M06	RED ABALONE	POS	11/21/90
90M12	ROCKFISH	POS	11/21/90
90M50	BLACK ABALONE	7C2	11/29/90
90M48	CALIFORNIA MUSSELS	7C2	11/29/90
90M49	IRIDAEA	7C2	11/29/90
90M55	BLACK ABALONE	DCM	11/29/90
90M53	CALIFORNIA MUSSELS	DCM	11/29/90
90M54	IRIDAEA	DCM	11/29/90
90M57	BLACK ABALONE	PON	11/29/90
90M56	CALIFORNIA MUSSELS	PON	11/29/90

TABLE B-6 (continued)

DIABLO CANYON POWER PLANT 1990 ANNUAL REPORT
LIST OF MARINE AND TERRESTRIAL SAMPLES
COLLECTED AND ANALYZED

SAMPLE NO.	DESCRIPTION	STATION NO.	COLLECTION DATE
90M46	PERCH	7C2	11/30/90
90M47	ROCKFISH	7C2	11/30/90
90M52	BLACK ABALONE	POS	11/30/90
90M51	CALIFORNIA MUSSELS	POS	11/30/90
90N78	SEDIMENT	DCM	12/03/90
90M86	BROCCOLI GREENS	5F2	12/13/90
90M88	SURFACE WATER	5S2	12/13/90
90M85	SNOW PEAS	7C1	12/13/90
90M89	DRINKING WATER	DW1	12/13/90
90M87	OUTFALL WATER	OUT	12/13/90
90N25	BULL KELP BLADE	7C2	12/14/90
90N26	BULL KELP PNEUMATOCYST	7C2	12/14/90
90N24	SEAWATER	7C2	12/14/90
90N19	SEAWATER	DCM	12/14/90
90N17	BULL KELP BLADE	PON	12/14/90
90N18	BULL KELP PNEUMATOCYST	PON	12/14/90
90N16	SEAWATER	PON	12/14/90
90N22	BULL KELP BLADE	POS	12/14/90
90N23	BULL KELP PNEUMATOCYST	POS	12/14/90
90N21	SEAWATER	POS	12/14/90
90N15	MILK	5F2	12/18/90
90N14	LETTUCE	7G1	12/18/90
90N80	COMMERCIAL SOLE	7D3	12/21/90
90N79	COMMERCIAL COD	7D3	12/31/90