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 AUTH. NAME AUTHOR AFFILIATION  
 TOWNSEND, J. D. Pacific Gas & Electric Co.  
 RECIP. NAME RECIPIENT AFFILIATION

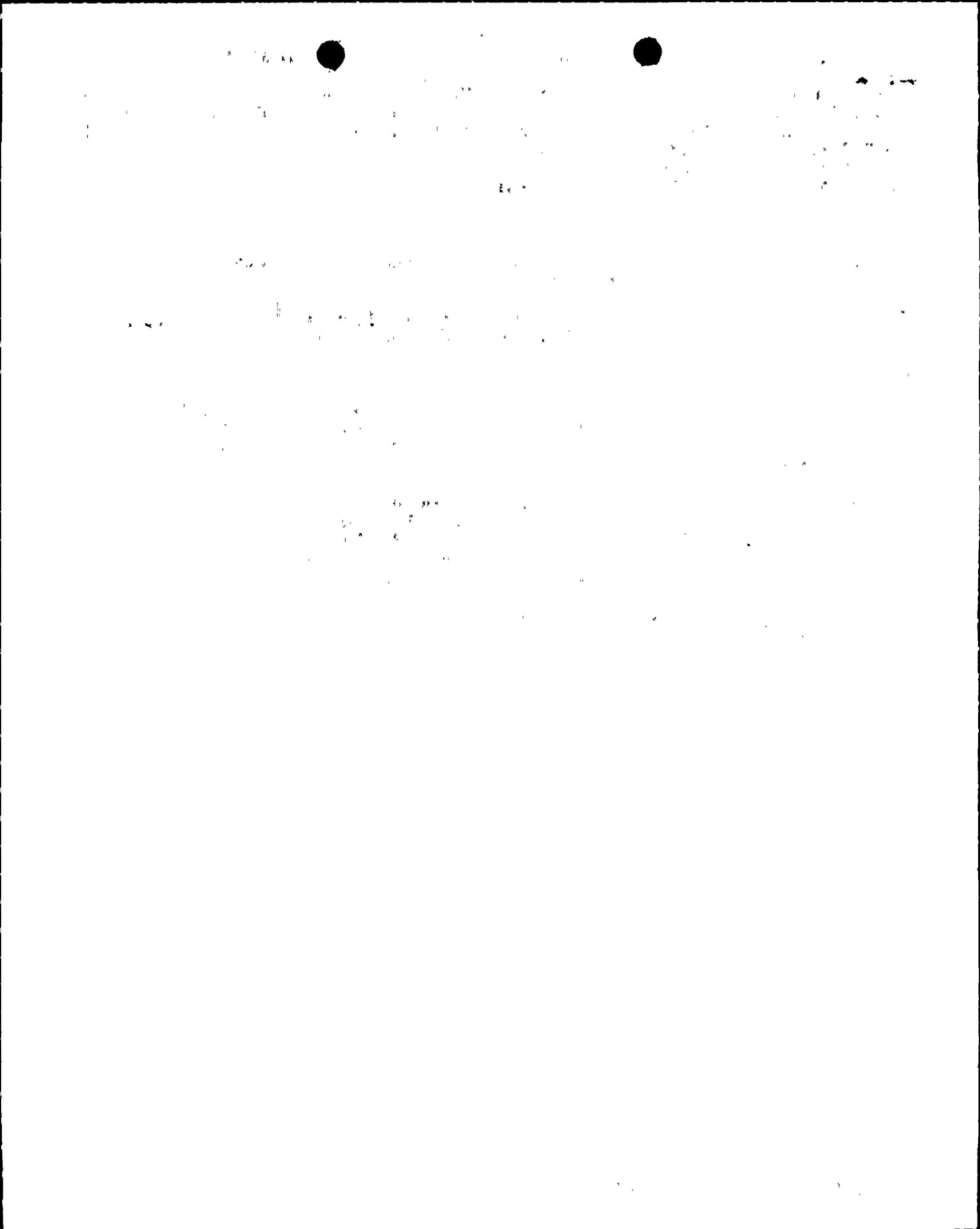
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SUBJECT: "Rept on Discharge Monitoring at Diablo Canyon Power Plant  
 During Month of Oct 1987." W/871120 ltr.

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NOTES: *see Enviro Rpts*

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	AEOD/DSP/TPAB	1	1	ARM TECH ADV	1	1
	NRR/DEST/PSB	1	1	NRR/DREP/RPB	4	4
	NRR/PMAS/ILRB	1	1	<u>REG FILE</u> 01	1	1
	RGN5 FILE 02	1	1	RGN2/DRSS/EPRPB	1	1
EXTERNAL:	BNL TICHLER, J03	1	1	LPDR	2	2
	NRC PDR	1	1			



November 20, 1987



Mr. William Leonard, Executive Officer  
California Regional Water Quality Control Board  
Central Coast Region  
1102-A Laurel Lane  
San Luis Obispo, California 93401

Dear Mr. Leonard:

Discharge Monitoring and Reporting Program  
Diablo Canyon Power Plant

The monthly report for October 1987 of the Diablo Canyon Power Plant Discharge and Monitoring Program, in accordance with Order 85-101, NPDES No. CA0003751 is enclosed.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. The results contained herein should not be construed to imply accuracy beyond the errors associated with equipment, instrumentation, or method capability, nor should they be construed to represent an endorsement of the required testing methodology. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

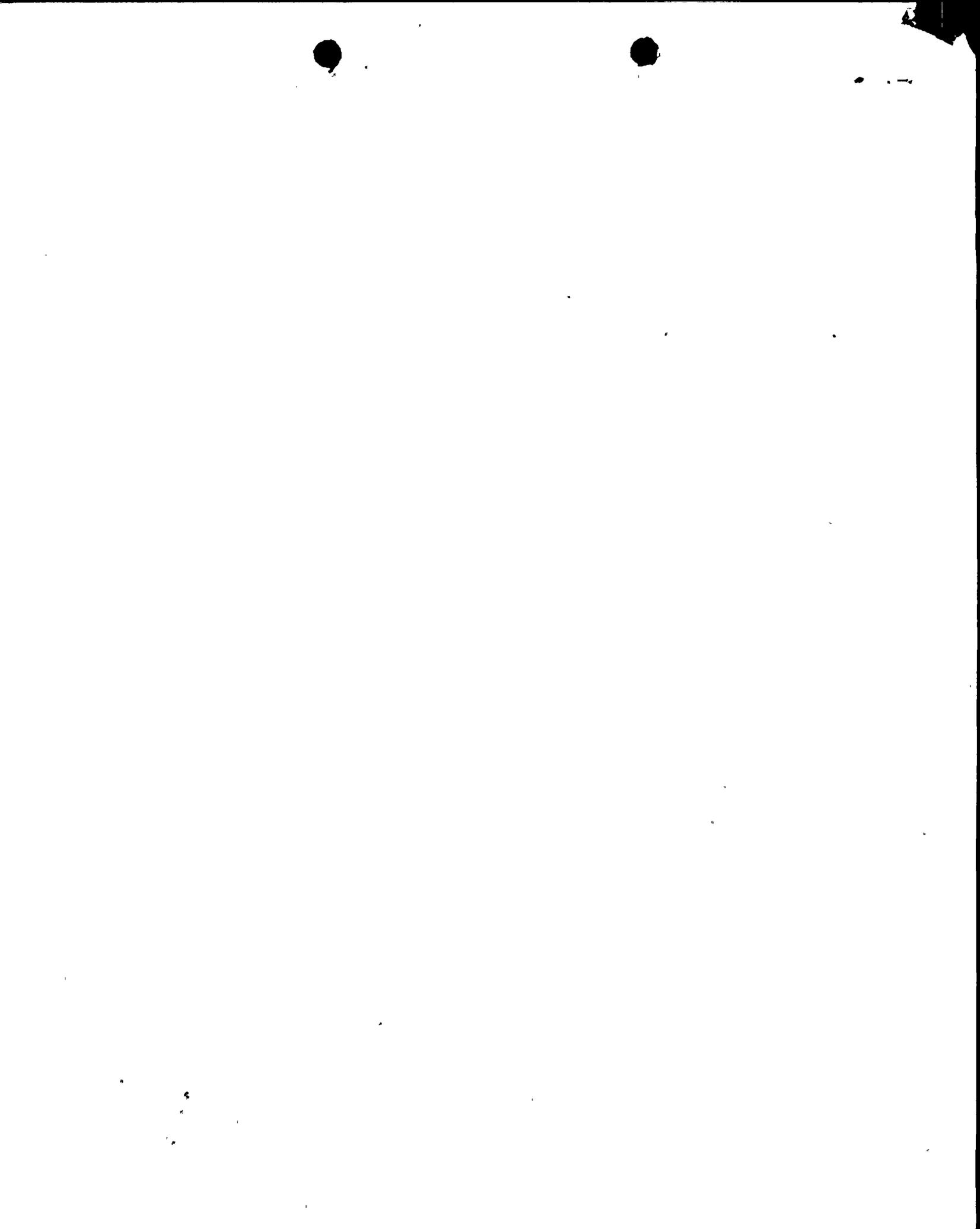
Sincerely,

  
JOHN D. TOWNSEND

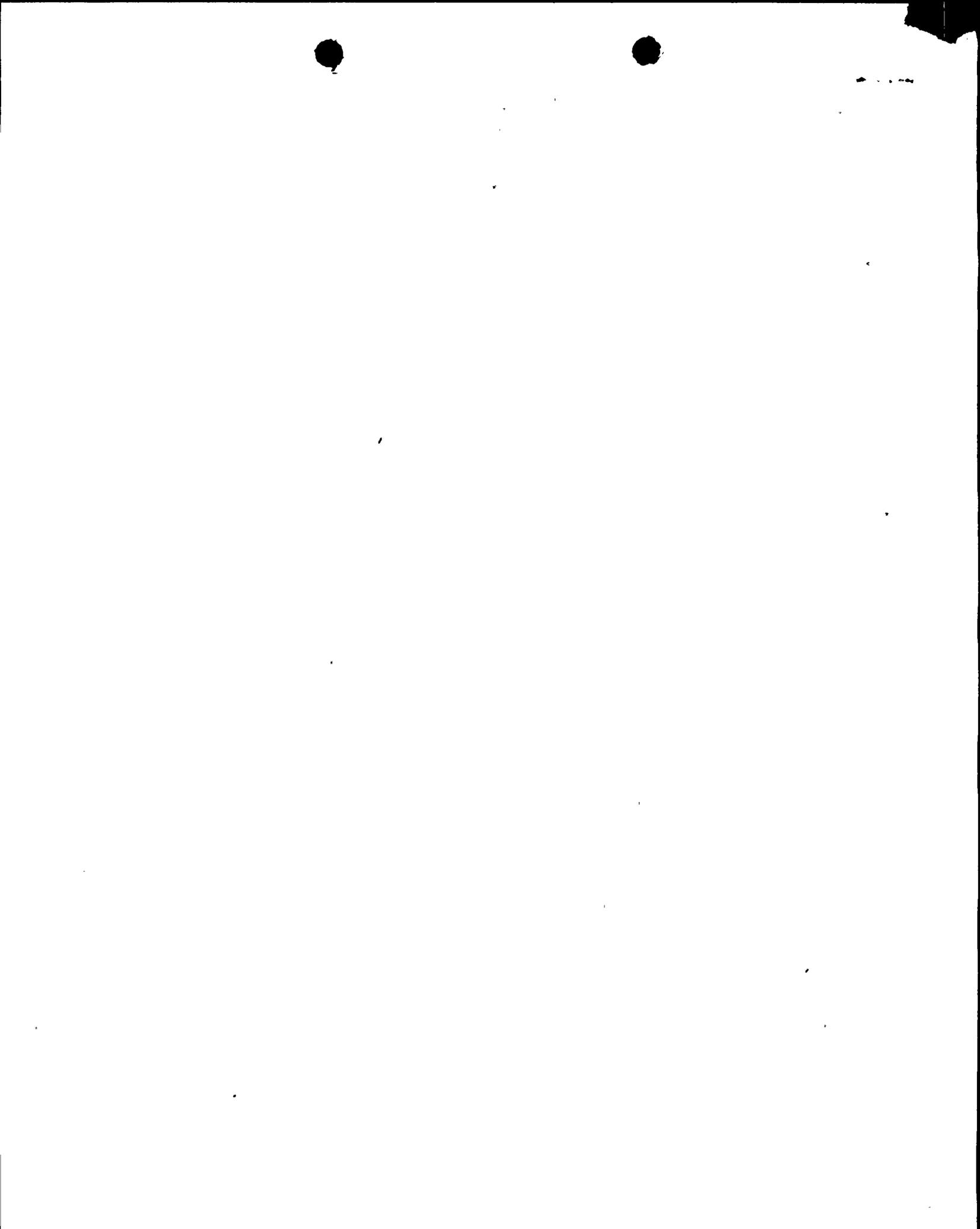
JDT:cd

Enclosure

LEAG  
11



bcc: DWBehrens  
JVBoots  
MJDoye/VLWyman  
VCFurtado  
JEGardner  
JBGibson/DJWilliamson  
MTHug  
BSLew/ERKendle  
RWLorenz/KMGodfrey  
MNNorem  
WAO'Hara  
JASexton  
JDShiffer  
JWWarrick  
CJWeinberg/JTWells  
RMS



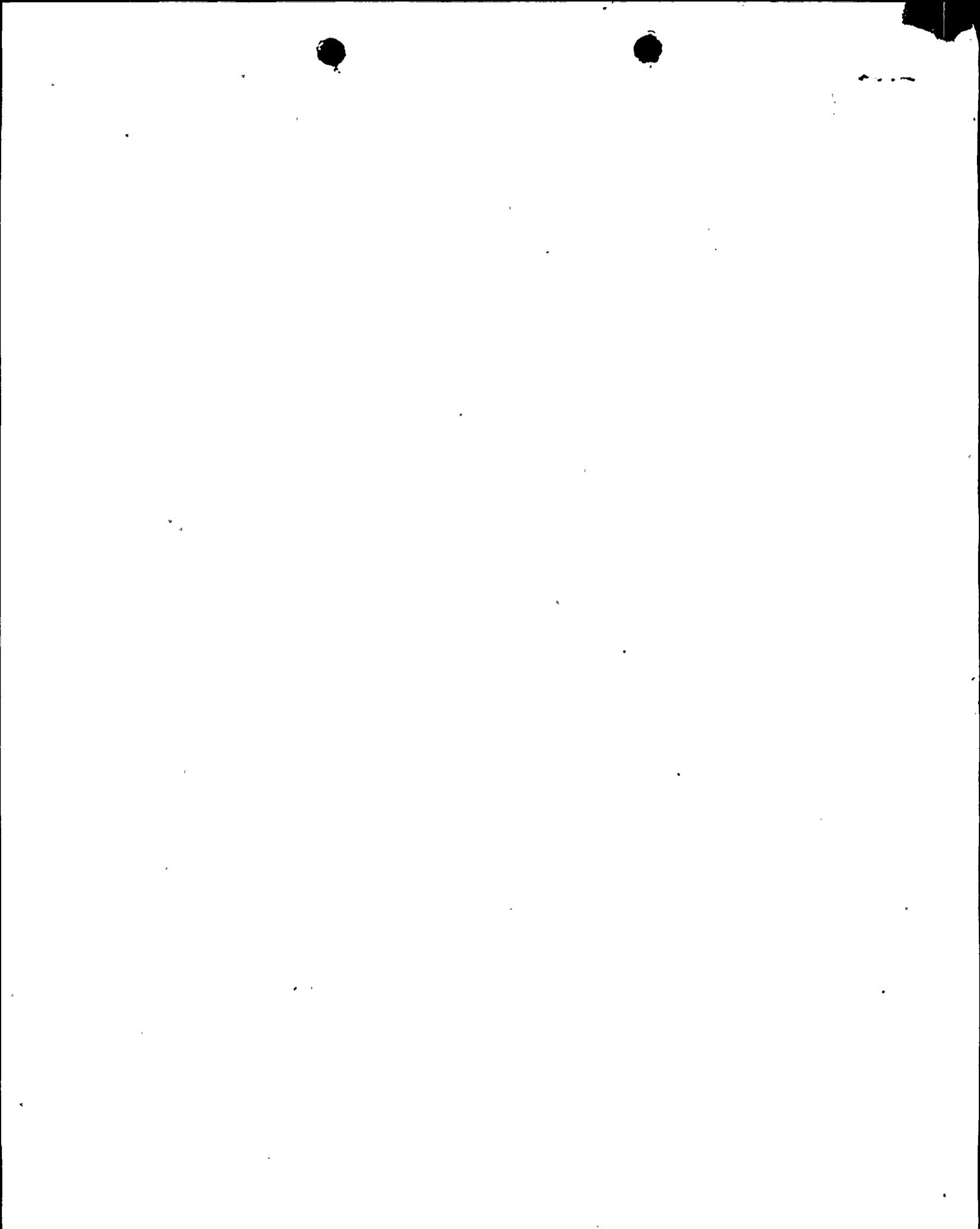
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Long Beach, California 90802

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California Department of Fish and Game  
Resources Building  
1419 9th Street  
Sacramento, California 95814



PACIFIC GAS & ELECTRIC COMPANY  
NUCLEAR PLANT OPERATIONS

REPORT ON  
DISCHARGE MONITORING AT  
DIABLO CANYON POWER PLANT  
DURING THE MONTH OF  
OCTOBER 1987

8711300160 871031  
PDR ADOCK 05000275  
R PDR

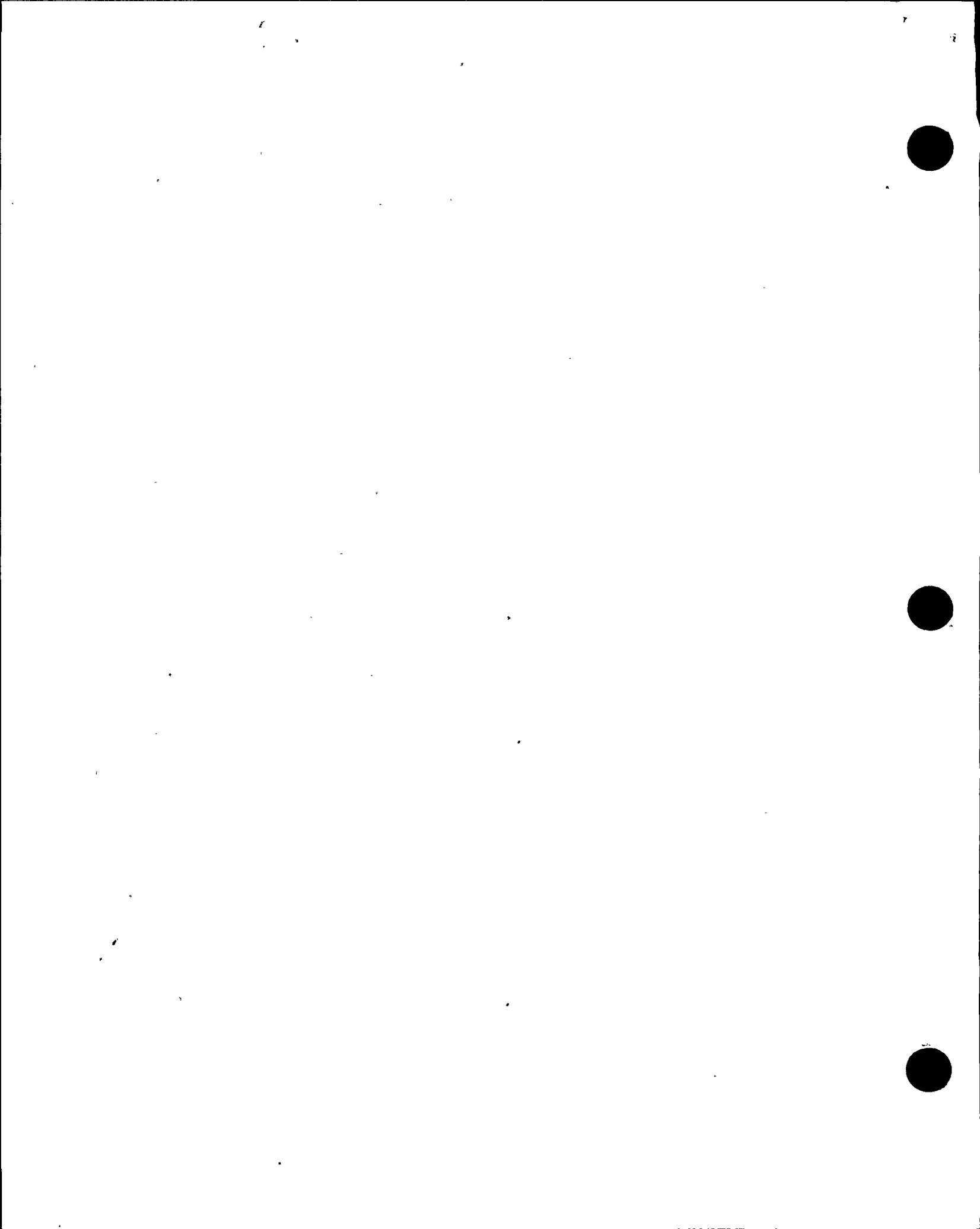
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1950

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## OVERVIEW

- A. During the month of October, discharges occurred from Discharge Paths 001 (main circulating pumps), 001B, 001D, 001E, 001F, 001G, 001H, 001L, 001N, 001P, and 002 through 013. No discharges occurred from Discharge Paths 001A, 001C, 001I, 001-J, 001K, and 001M.
- B. The Board was notified that while conducting the annual subtidal red abalone count on October 28, 1987, diver biologists from the Thermal Effects Monitoring Program (TEMP) observed and collected dead and dying abalone in the immediate vicinity of the plant's discharge. While attempting to determine the extent of the mortality, 21 dead abalone and 87 live abalone were observed. Other affected species, including the sea star, Pycnopodia helianthoides; rock crab, Cancer antennarius; and black-and-yellow rockfish, Sebastes chrysomelas; were also observed. All mortalities were observed in depths less than 10 feet MLLW within the boundaries of the discharge plume out to about 60 meters from the discharge structure.

A review of thermal effects information generated by laboratory studies conducted at the Diablo Canyon laboratory during 1978-80 and presented to the Regional Board during the 1982 NPDES permit hearings indicates that during periods of the year when ambient water temperatures drive the discharge temperatures above 73°F, thermally sensitive species near the discharge would be at risk. Therefore, we believe the observed mortalities were likely due to thermal stress as predicted.

- C. In all cases, chemical, radiochemical, and toxicity analyses were performed in accordance with chemical analysis procedures contained in the Diablo Canyon Power Plant, Units 1 and 2 Plant Manual, Volume 8, by State approved laboratories, or laboratories meeting the requirements specified in the California Regional Water Quality Control Board Central Coast Region "Standard Provisions and Reporting Requirements" dated January 25, 1985. Receiving water monitoring was performed in accordance with approved biological and oceanographic procedures.

## SUMMARY OF MONITORING PROGRAM

- A. Monitoring of Plant Influent and Effluent
1. Results of monitoring of plant influent and effluent in October are reported in Appendix 1.
  2. A static bioassay of Discharge 001 was performed on October 5, 1987 (Appendix 2).



## B. Monitoring of Receiving Waters

### 1. Ecological Studies at Diablo Canyon

Ecological studies in accordance with the Thermal Effects Monitoring Program (Provision D.4.a) continue.

### 2. Sediment Analysis

Sediment samples are collected in September.

### 3. Aerial Photography of Kelp Beds

Due to poor weather conditions during the month of October, aerial photography (infrared film type 2443) of kelp beds in the vicinity of Diablo Canyon was rescheduled for November.

### 4. Surface Water Temperature

Surface water temperatures were measured October 22, 1987, and are reported in Appendix 3.

### 5. Stratified Water Temperatures

Stratified water temperatures were measured October 20, 1987, and are presented in Appendix 4. A map of station locations is included.

### 6. pH and Dissolved Oxygen of Receiving Waters

Results of pH and dissolved oxygen monitoring in the receiving waters is provided in Appendix 5. Also included is a map of station locations.

### 7. Incident Light Measurements

Incident light measurements are reported quarterly in reports submitted in January, April, July, and October.

### 8. In situ Bioassay

Results of the Mussel Watch program will be reported to the Board directly from the California Department of Fish and Game in their periodic report for this program.



APPENDIX 1

Influent and Effluent Monitoring  
October 1987



CALIFORNIA REGIONAL WATER QUALITY  
CONTROL BOARD  
CENTRAL COAST REGION  
1102A LAUREL LANE  
SAN LUIS OBISPO, CA 93401

DISCHARGE SELF MONITORING REPORT

PACIFIC GAS AND ELECTRIC CO.  
DIABLO CANYON NUCLEAR POWER PLANT  
PO BOX 56  
AVILA BEACH, CALIF 93424  
PAGE (M) 1

FACILITY I.D.  
3 402003001

YEAR/ MO / DAY  
BEGINNING 87/10/01

YEAR/ MO / DAY  
ENDING 87/10/31

STATE CODE  
06

NPDES PERMIT #  
CA0003751

STATION ANALYSIS UNITS SNPL TYPE FREQ.	INFLUENT TEMPERATURE DEGREES F METERED CONTINUOUS	EFFLUENT 001 TEMPERATURE DEGREES F METERED CONTINUOUS	EFFLUENT 001 FLOW MGD RECORDED DAILY	INFLUENT pH pH UNITS GRAB MONTHLY	EFFLUENT 001 pH pH UNITS GRAB MONTHLY	EFF 001P=003 pH pH UNITS GRAB WEEKLY	EFFLUENT 002 pH pH UNITS GRAB MONTHLY	EFFLUENT 003 pH pH UNITS GRAB MONTHLY
--	---	---	--------------------------------------	-----------------------------------	---------------------------------------	--------------------------------------	---------------------------------------	---------------------------------------

OCTOBER								
1	57.2	74.5	2490					
2	57.2	74.4	2490					
3	57.6	75	2490					
4	58.1	76.8	2490					
5	58.5	74.6	2500				7.3	
6	60.1	77.6	2490	7.9	7.98			
7	59.2	76.5	2490					
8	57.8	76	2490					
9	57.8	75.1	2490					
10	58	75.4	2380					
11	59.1	75.6	2210					
12	58.6	75.9	2490					
13	57.2	75.5	2430					
14	57.2	74.5	2130					7.7
15	57.6	74.7	2490					
16	58.4	74.9	2490					
17	59	75.1	2270					
18	59.4	76.9	2490					
19	59.4	76.8	2410					
20	59.5	75.7	2330					
21	60.4	76.8	2490					
22	61.9	77.9	2490					
23	61.9	78.5	2490					
24	61.7	79	2490					
25	62.1	79.1	2160					
26	62	79.3	2490					
27	62.3	79.4	2490					
28	62.1	79.6	2490					
29	61.1	79.1	2490					
30	60.9	77.6	2490					
31	61	76.7	2400					

MONTHLY AVG	59.5	76.6	2436.0	NO DISCHARGE				
MONTHLY HIGH	62.3	79.6	2500.0					
MONTHLY LOW	57.2	74.4	2130.0					

TIMES EXCEEDED	NO LIMIT	MAXIMUM = 0	MAX 2760 = 0	NO LIMIT	MIN 6.0 = 0			
TIMES EXCEEDED		INTAKE PLUS			MAX 9.0 = 0			
TIMES EXCEEDED		22 DEGREES (**)						

REMARKS: (\*\*) Number of Samples taken during the day. (\*\*) Except During Demusseling.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT  
*J.R. Kueny*  
DATE  
11/17/87



CALIFORNIA REGIONAL WATER QUALITY  
CONTROL BOARD  
CENTRAL COAST REGION  
1102A LAUREL LANE  
SAN LUIS OBISPO, CA 93401

DISCHARGE SELF MONITORING REPORT

PACIFIC GAS AND ELECTRIC CO.  
DIABLO CANYON NUCLEAR POWER PLANT  
PO BOX 56  
AVILA BEACH, CALIF 93424  
PAGE (N) 2

FACILITY I.D.  
3 402003001

YEAR/ MO / DAY  
BEGINNING 87/10/01

YEAR/ MO / DAY  
ENDING 87/10/31

STATE CODE  
06

NPDES PERMIT #  
CA0003751

STATION ANALYSIS UNITS SMPL TYPE FREQ.	EFFLUENT 004 pH pH UNITS GRAB MONTHLY	INFLUENT TURBIDITY NTU GRAB MONTHLY	EFFLUENT 001 TURBIDITY NTU GRAB MONTHLY	EFFLUENT 001 OIL & GREASE mg/l GRAB MONTHLY	EFFLUENT 001F OIL & GREASE mg/l GRAB MONTHLY	EFFLUENT 001N OIL & GREASE mg/l GRAB MONTHLY	EFF001P=>003 OIL & GREASE mg/l GRAB WEEKLY	EFFLUENT 001N SETTL SOLIDS mg/l GRAB WEEKLY
--	---------------------------------------	-------------------------------------	---	---	--	--	--	---

OCTOBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
														7.94																	
						.61		.37		<3																				.1	
																														.1	
																														.1	

MONTHLY AVG																NO DISCHARGE	.1
MONTHLY HIGH																	.1
MONTHLY LOW																	.1

TIMES EXCEEDED	MIN 6.0 =0	NO LIMIT	NO LIMIT	NO LIMIT	NO AVG 15 =0	NO AVG 15 =0	NO AVG 15 =0	NO AVG 1.0 =0
TIMES EXCEEDED	MAX 9.0 =0				D MAX 20 =0	D MAX 20 =0	D MAX 20 =0	D MAX 3.0 =0
TIMES EXCEEDED								

REMARKS: (#) Number of Samples taken during the day.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT  
*John R. Krenn*  
DATE  
11/17/87















CALIFORNIA REGIONAL WATER QUALITY  
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STATION ANALYSIS UNITS SKPL TYPE FREQ.	EFFLUENT 001 T CHLOR RES ug/l GRAB 2 per CYCLE	EFFLUENT 001 FREE AVL CHL ug/l GRAB 2 per CYCLE	EFFLUENT 001 CHLORINE USED lbs/day RECORDED MONTHLY	EFFLUENT 001 AMMONIA (N) mg/l GRAB MONTHLY	EFFLUENT 001 TITANIUM ug/l GRAB MONTHLY	EFFLUENT 001D LITHIUM ug/l MONTHLY COMP. MONTHLY	EFFLUENT 001D BORDON ug/l MONTHLY COMP. MONTHLY	EFFLUENT 001D HYDRAZINE ug/l GRAB MONTHLY
--	--	---	---	--	---	--	---	---

OCTOBER	#	#	#	#	#	#	#	#
1								50
2	8	50	8	50	333			
3								
4								
5	8	<20	8	<20	333			
6								
7	8	<20	8	<20	333		69	83000
8								
9	8	<20	8	<20	333			
10								
11								
12						41		
13	2	<20	2	<20	21			
14								
15								
16	6	20	6	<20	187			
17								
18								
19	8	<20	8	<20	333			
20	8	<20	8	<20	333			
21	8	<20	8	<20	333			
22	8	40	8	30	333			
23	8	50	8	40	333			
24								
25								
26	8	<20	8	<20	333			
27	8	<20	8	<20	333			
28	8	<20	8	<20	333			
29	2	<20	2	<20	84			
30								
31								

MONTHLY AVG	24	24	289					
MONTHLY HIGH	50	50	333					
MONTHLY LOW	<20	<20	21					

TIMES EXCEEDED D MAX 200 =0	30 DAY AV 200 =0	NO LIMIT	6M-MEAN 4.44=0	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT
TIMES EXCEEDED I MAX 200 =0			D MAX 17.8 =0				
TIMES EXCEEDED	D MAX 500 =0		I MAX 44.4 =0				

REMARKS: (#) Number of Samples taken during the day.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT DATE  
John R. Krenn 11/17/87



CALIFORNIA REGIONAL WATER QUALITY  
CONTROL BOARD  
CENTRAL COAST REGION  
1102A LAUREL LANE  
SAN LUIS OBISPO, CA 93401

DISCHARGE SELF MONITORING REPORT

PACIFIC GAS AND ELECTRIC CO.  
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AVILA BEACH, CALIF 93424  
PAGE (N) 7

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3 402003001

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06

NPDES PERMIT #  
CA0003751

STATION ANALYSIS UNITS SMPL TYPE FREQ.	EFF 001N=>003 TOTL COLIFORM MPN/100ml GRAB 4 TIMES/WEEK	EFF 001N=>003 FECAL COLIFORM MPN/100ml GRAB 4 TIMES/WEEK	EFF 001N=>INTK TOTL COLIFORM MPN/100ml GRAB 4 TIMES/WEEK	EFF 001N=>INTK FECAL COLIFORM MPN/100ml GRAB 4 TIMES/WEEK
--	---	--	--	---

OCTOBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

MONTHLY AVG	NO DISCHARGE	NO DISCHARGE	NO DISCHARGE	NO DISCHARGE
MONTHLY HIGH				
MONTHLY LOW				
TIMES EXCEEDED	80% SMPLS>1K	MEAN>200=	80% SMPLS>1K	MEAN>200=
TIMES EXCEEDED	=	90% SMPLS>400	=	90% SMPLS>400
TIMES EXCEEDED	1 MAX >10K=	=	1 MAX >10K=	=

REMARKS: (#) Number of Samples taken during the day.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT  
*John R. Kueny*  
DATE  
11/17/87



CALIFORNIA REGIONAL WATER QUALITY  
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STATION ANALYSIS UNITS SMPL TYPE FREQ.	INFLUENT OIL & GREASE mg/l GRAB JA/AP/JUL/OCT	EFFLUENT 001C OIL & GREASE mg/l GRAB JA/AP/JUL/OCT	EFFLUENT 001D OIL & GREASE mg/l GRAB JA/AP/JUL/OCT	EFFLUENT 001G OIL & GREASE mg/l GRAB JA/AP/JUL/OCT	EFFLUENT 001H OIL & GREASE mg/l GRAB JA/AP/JUL/OCT	EFFLUENT 001I OIL & GREASE mg/l GRAB JA/AP/JUL/OCT	EFFLUENT 001J OIL & GREASE mg/l GRAB JA/AP/JUL/OCT	EFFLUENT 001K OIL & GREASE mg/l GRAB JA/AP/JUL/OCT
--	---	--	--	--	--	--	--	--

OCTOBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
					5																										

MONTHLY AVG	NO DISCHARGE	NO DISCHARGE	NO DISCHARGE	NO DISCHARGE
MONTHLY HIGH				
MONTHLY LOW				

TIMES EXCEEDED	NO LIMIT	NO AVG 15=0							
TIMES EXCEEDED		D MAX 20 =0							
TIMES EXCEEDED									

REMARKS: (\$) Number of Samples taken during the day.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT DATE  
John R. Krenn 11/17/87







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STATION ANALYSIS UNITS SMPL TYPE FREQ.	INFLUENT T HF RESIDUE mg/l NET	INFLUENT T CHROMIUM ug/l	INFLUENT COPPER ug/l	INFLUENT NICKEL ug/l	INFLUENT ZINC ug/l	INFLUENT AMMONIA (N) mg/l	EFFLUENT 001 PHENOLIC CMP ug/l (NONCL)	EFFLUENT 001 CHLOR PHENDL ug/l
	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
	JA/AP/JUL/OCT	JA/AP/JUL/OCT	JA/AP/JUL/OCT	JA/AP/JUL/OCT	JA/AP/JUL/OCT	JA/AP/JUL/OCT	JA/AP/JUL/OCT	JA/AP/JUL/OCT

STATION ANALYSIS UNITS SMPL TYPE FREQ.	INFLUENT T HF RESIDUE mg/l NET	INFLUENT T CHROMIUM ug/l	INFLUENT COPPER ug/l	INFLUENT NICKEL ug/l	INFLUENT ZINC ug/l	INFLUENT AMMONIA (N) mg/l	EFFLUENT 001 PHENOLIC CMP ug/l (NONCL)	EFFLUENT 001 CHLOR PHENDL ug/l
1								
2								
3								
4								
5								
6	1	<1	2	2	11	<0.041		
7								
8								
9								
10								
11								
12							15	<20
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								

MONTHLY AVG								
MONTHLY HIGH								
MONTHLY LOW								

TIMES EXCEEDED	NO LIMIT	6M-MEAN 222 =0	6M-MEAN 10 =0					
TIMES EXCEEDED							D MAX 888 =0	D MAX 30 =0
TIMES EXCEEDED							I MAX 2200 =0	I MAX 70 =0

REMARKS: (\$) Number\_of\_Samples\_taken\_during\_the\_day.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT DATE  
John R. Krumm 4/17/87



CALIFORNIA REGIONAL WATER QUALITY  
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CENTRAL COAST REGION  
1102A LAUREL LANE  
SAN LUIS OBISPO, CA 93401

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PAGE (R) 4

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3 402003001

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YEAR/ MO /DAY  
ENDING 87/10/31

STATE CODE  
06

NPDES PERMIT #  
CA0003751

STATION ANALYSIS UNITS SKPL TYPE FREQ.	EFFLUENT 001 TOX CONCEN TU GRAB JA/AP/JUL/OCT	EFFLUENT 001 PCB'S ug/1 GRAB JA/AP/JUL/OCT	EFFLUENT 005 PCB'S ug/1 GRAB JA/AP/JUL/OCT	EFFLUENT 001 DIS OXYGEN mg/1 GRAB JA/AP/JUL/OCT	EFFLUENT 001D CADMIUM ug/1 QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001H CADMIUM ug/1 QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001L CADMIUM ug/1 QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001F CADMIUM ug/1 WEEKLY COMP JA/AP/JUL/OCT
--	---	--	--	---	---	---	---	--

OCTOBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
					NOTE (1)			6.4		<13		<13		<13																	

MONTHLY AVG																															
MONTHLY HIGH																															
MONTHLY LOW																															

TIMES EXCEEDED	6M-MEAN 0.37	NO LIMIT	NO LIMIT	I MAX < 5.0 =0	NO LIMIT				
TIMES EXCEEDED	=0								
TIMES EXCEEDED									

MARKS: (\*) Number of Samples taken during the day. (1) No mortalities.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT DATE  
J.R. Kneary 11/17/87







CALIFORNIA REGIONAL WATER QUALITY  
CONTROL BOARD  
CENTRAL COAST REGION  
1102A LAUREL LANE  
SAN LUIS OBISPO, CA 93401

DISCHARGE SELF MONITORING REPORT

PACIFIC GAS AND ELECTRIC CO.  
DIABLO CANYON NUCLEAR POWER PLANT  
PO BOX 56  
AVILA BEACH, CALIF 93424  
PAGE (2) 6

FACILITY I.D.  
3 402003001

YEAR/ MO / DAY  
BEGINNING 87/10/01

YEAR/ MO / DAY  
ENDING 87/10/31

STATE CODE  
06

NPDES PERMIT #  
CA0003751

STATION ANALYSIS UNITS SKPL TYPE FREQ.	EFFLUENT 001D LEAD ug/l QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001H LEAD ug/l QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001L LEAD ug/l QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001F LEAD ug/l WEEKLY COMP JA/AP/JUL/OCT	EFFLUENT 001D MERCURY ug/l QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001H MERCURY ug/l QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001L MERCURY ug/l QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001F MERCURY ug/l WEEKLY COMP JA/AP/JUL/OCT
OCTOBER	\$	\$	\$	\$	\$	\$	\$	\$
1								
2								
3								
4								
5								
6								
7	<67	<67	<67	<67	5.6	.1	.1	.1
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
MONTHLY AVG								
MONTHLY HIGH								
MONTHLY LOW								
TIMES EXCEEDED	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT	NO LIMIT
TIMES EXCEEDED								
TIMES EXCEEDED								

REMARKS: (\$) Number of Samples taken during the day.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT DATE  
John R. Kuenzler 11/17/87



CALIFORNIA REGIONAL WATER QUALITY  
CONTROL BOARD  
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DISCHARGE SELF MONITORING REPORT

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PO BOX 56  
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PAGE (8) 7

FACILITY I.D.  
3 402003001

YEAR/ MO / DAY  
BEGINNING 87/10/01

YEAR/ MO / DAY  
ENDING 87/10/31

STATE CODE  
06

NPDES PERMIT #  
CA0003751

STATION ANALYSIS UNITS SMPL TYPE FREQ.	EFFLUENT 001D NICKEL ug/l QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001H NICKEL ug/l QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001L NICKEL ug/l QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001F NICKEL ug/l WEEKLY COMP JA/AP/JUL/OCT	EFFLUENT 001D SILVER ug/l QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001H SILVER ug/l QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001L SILVER ug/l QTRLY COMP JA/AP/JUL/OCT	EFFLUENT 001F SILVER ug/l WEEKLY COMP JA/AP/JUL/OCT
--	--	--	--	---	--	--	--	---

OCTOBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
							94	100	21	178	4	4	16	4																	

MONTHLY AVG																														
MONTHLY HIGH																														
MONTHLY LOW																														

TIMES EXCEEDED	NO LIMIT																													
TIMES EXCEEDED																														
TIMES EXCEEDED																														

REMARKS: (#) Number of Samples taken during the day.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT DATE  
*John R. Krumm* 4/17/87







CALIFORNIA REGIONAL WATER QUALITY  
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DISCHARGE SELF MONITORING REPORT

PACIFIC GAS AND ELECTRIC CO.  
DIABLO CANYON NUCLEAR POWER PLANT  
PO BOX 56  
AVILA BEACH, CALIF 93424  
PAGE (B) 9

FACILITY I.D.  
3 402003001

YEAR/ MO / DAY  
BEGINNING 87/10/01

YEAR/ MO / DAY  
ENDING 87/10/31

STATE CODE  
06

NPDES PERMIT #  
CA0003751

STATION ANALYSIS UNITS SMPL TYPE FREQ.	EFFLUENT 001D	EFFLUENT 001F	EFFLUENT 001I	EFFLUENT 001L	EFFLUENT 001M
	COPPER	COPPER	COPPER	COPPER	COPPER
	mg/l	mg/l	mg/l	mg/l	mg/l
	24-HR COMP.				
	METAL CLNG				

OCTOBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

MONTHLY AVG	NO DISCHARGE				
MONTHLY HIGH					
MONTHLY LOW					

TIMES EXCEEDED	NO AVG 1 =				
TIMES EXCEEDED	D MAX 1 =				
TIMES EXCEEDED					

REMARKS: (#) Number of Samples taken during the day.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT DATE  
John R. Krenn 11/17/87



CALIFORNIA REGIONAL WATER QUALITY  
CONTROL BOARD  
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PAGE (0) 10

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BEGINNING 87/10/01

YEAR/ MO /DAY  
ENDING 87/10/31

STATE CODE  
06

NPDES PERMIT #  
CA0003751

STATION ANALYSIS UNITS SMPL TYPE FREQ.	EFFLUENT 001D IRON mg/l 24-HR COMP. METAL CLNG	EFFLUENT 001F IRON mg/l 24-HR COMP. METAL CLNG	EFFLUENT 001I IRON mg/l 24-HR COMP. METAL CLNG	EFFLUENT 001L IRON mg/l 24-HR COMP. METAL CLNG	EFFLUENT 001M IRON mg/l 24-HR COMP. METAL CLNG
--	--	--	--	--	--

OCTOBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

MONTHLY AVG	NO DISCHARGE				
MONTHLY HIGH					
MONTHLY LOW					

TIMES EXCEEDED	NO AVG 1 =				
TIMES EXCEEDED	D MAX 1 =				
TIMES EXCEEDED					

REMARKS: (\*) Number of Samples taken during the day.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT  
*John R. Kneeney*  
DATE  
11/17/87



CALIFORNIA REGIONAL WATER QUALITY  
CONTROL BOARD  
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DISCHARGE SELF MONITORING REPORT

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YEAR/ MO / DAY  
BEGINNING 87/10/01

YEAR/ MO / DAY  
ENDING 87/10/31

STATE CODE  
06

NPDES PERMIT #  
CA0003751

STATION ANALYSIS UNITS SMPL TYPE FREQ.	INFLUENT ARSENIC ug/l GRAB OCTOBER	EFFLUENT 001 ARSENIC ug/l GRAB OCTOBER	001BDFHIL ARSENIC ug/l COMP GRAB OCTOBER	INFLUENT CADMIUM ug/l GRAB OCTOBER	EFFLUENT 001 CADMIUM ug/l GRAB OCTOBER	INFLUENT LEAD ug/l GRAB OCTOBER	EFFLUENT 001 LEAD ug/l GRAB OCTOBER
OCTOBER							
1							
2							
3							
4							
5							
6				<1	<1	1	<1
7							
8							
9							
10							
11							
12	<20	<20					
13							
14							
15							
16							
17							
18							
19							
20							
21							
22			30				
23							
24							
25							
26							
27							
28							
29							
30							
31							
MONTHLY AVG							
MONTHLY HIGH							
MONTHLY LOW							
TIMES EXCEEDED	NO LIMIT	6M-MEAN 40 =0	NO LIMIT	NO LIMIT	6M-MEAN 22 =0	NO LIMIT	6M-MEAN 59 =0
TIMES EXCEEDED		D MAX 217 =0			D MAX 89 =0		D MAX 237 =0
TIMES EXCEEDED		I MAX 573 =0			I MAX 222 =0		I MAX 592 =0

REMARKS: (#) Number of Samples taken during the day.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT DATE  
John R. Krennag 11/17/87



CALIFORNIA REGIONAL WATER QUALITY  
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DISCHARGE SELF MONITORING REPORT

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FACILITY I.D.  
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YEAR/ MO / DAY  
BEGINNING 87/10/01

YEAR/ MO / DAY  
ENDING 87/10/31

STATE CODE  
06

NPDES PERMIT #  
CA0003751

STATION ANALYSIS UNITS SMPL TYPE FREQ.	INFLUENT MERCURY ug/l GRAB OCTOBER	EFFLUENT 001 MERCURY ug/l GRAB OCTOBER	INFLUENT SILVER ug/l GRAB OCTOBER	EFFLUENT 001 SILVER ug/l GRAB OCTOBER	INFLUENT CYANIDE ug/l GRAB OCTOBER	EFFLUENT 001 CYANIDE ug/l GRAB OCTOBER	INFLUENT PHENOLIC CMP ug/l (NONCL) GRAB OCTOBER	INFLUENT CHLOR PHENDL ug/l GRAB OCTOBER
OCTOBER								
1								
2								
3								
4								
5								
6			<1	<1				
7								
8								
9								
10								
11								
12					<20	<20	29	<20
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25	1.2	.1						
26								
27								
28								
29								
30								
31								
MONTHLY AVG								
MONTHLY HIGH								
MONTHLY LOW								
TIMES EXCEEDED	NO LIMIT	6M-MEAN 0.65=0	NO LIMIT	6M-MEAN 2.3 =0	NO LIMIT	6M-MEAN 37 =0	NO LIMIT	NO LIMIT
TIMES EXCEEDED		D MAX 3.76 =0		D MAX 12.3 =0		D MAX 148 =0		
TIMES EXCEEDED				I MAX 32.3 =0		I MAX 370 =0		

REMARKS: (\*) Number of Samples taken during the day.

PRINCIPAL EXECUTIVE OFFICER  
JAMES D. SHIFFER

SIGNATURE OF AUTHORIZED AGENT DATE  
John R. Krenn 11/17/87



APPENDIX 2

Static Bioassay  
October 5, 1987



PACIFIC GAS & ELECTRIC COMPANY  
 DEPARTMENT OF ENGINEERING RESEARCH  
 DIABLO CANYON BIOLOGICAL LABORATORY  
 STATIC BIOASSAY REPORT SHEET

ASSAY NO. 146-N

TEST ORGANISM DATA

TEST SPECIES Red abalone  
 SOURCE Estero Bay Mariculture  
 AVERAGE LENGTH 29 MM RANGE 25-34 MM  
 ACCLIMATION TIME 1 yr. TEMPERATURE ambient  
 WATER SOURCE Bio Lab Sea Water pump

TEST SOLUTION DATA

SOURCE OF TEST SOLUTION DCPP Discharge  
 DATE/TIME SAMPLED 05 OCT '87 / 1230

DATE STARTED 05 Oct '87  
 VOLUME/DEPTH OF TEST SOLUTION 16 l / 20 cm  
 TYPE OF AERATION Condé air pump

TIME STARTED 1400 HRS.  
 RENEWAL OF TEST SOLUTION AT        HR. INTERVALS  
 NUMBER OF ORGANISMS PER CONCENTRATION 20  
 DILUTION WATER SOURCE Bio Lab Sea Water pump

TEST CONCENTRATIONS

	100%	CONTROL	INITIALS
<u>0 HOURS</u>			
TEMP.	<u>17°C</u>	<u>16°C</u>	<u>CPH</u>
D.O.	<u>6.8</u>	<u>7.4</u>	<u>CPH</u>
PH	<u>7.8</u>	<u>7.3</u>	<u>CPH</u>
SALINITY/HARDNESS	<u>      </u>	<u>      </u>	<u>CPH</u>
<u>24 HOURS</u>			
ORGANISMS SURVIVING	<u>20</u>	<u>20</u>	<u>VWB</u>
% SURVIVAL	<u>100%</u>	<u>100%</u>	<u>VWB</u>
TEMP.	<u>16°C</u>	<u>16°C</u>	<u>VWB</u>
D.O.	<u>6.4</u>	<u>5.6</u>	<u>VWB</u>
PH	<u>7.5</u>	<u>7.4</u>	<u>VWB</u>
<u>48 HOURS</u>			
ORGANISMS SURVIVING	<u>20</u>	<u>20</u>	<u>VWB</u>
% SURVIVAL	<u>100%</u>	<u>100%</u>	<u>VWB</u>
TEMP.	<u>17.5°C</u>	<u>17.5°C</u>	<u>VWB</u>
D.O.	<u>6.4</u>	<u>6.4</u>	<u>VWB</u>
PH	<u>7.5</u>	<u>7.5</u>	<u>VWB</u>
<u>72 HOURS</u>			
ORGANISMS SURVIVING	<u>20</u>	<u>20</u>	<u>VWB</u>
% SURVIVAL	<u>100%</u>	<u>100%</u>	<u>VWB</u>
TEMP.	<u>13.4°C</u>	<u>13.4°C</u>	<u>VWB</u>
D.O.	<u>7.0</u>	<u>6.2</u>	<u>VWB</u>
PH	<u>7.5</u>	<u>7.5</u>	<u>VWB</u>
<u>96 HOURS</u>			
ORGANISMS SURVIVING	<u>20</u>	<u>20</u>	<u>MWH</u>
% SURVIVAL	<u>100%</u>	<u>100%</u>	<u>MWH</u>
TEMP.	<u>14.2°C</u>	<u>14.2°C</u>	<u>MWH</u>
D.O.	<u>7.0</u>	<u>6.8</u>	<u>MWH</u>
PH	<u>7.5</u>	<u>7.6</u>	<u>MWH</u>
SALINITY/HARDNESS	<u>      </u>	<u>      </u>	<u>      </u>

TU: No mortalities

TESTED BY: VWB



APPENDIX 3

Surface Water Temperatures  
October 22, 1987



Surface Seawater Temperatures  
October 22, 1987

Surface water temperatures were measured on October 22, 1987 between 0907 and 1104 PDST. A towable electronic bathythermograph (TOWED-BT) was used for thermal plume mapping. The TOWED-BT is a self-contained underwater unit. The TOWED-BT uses a platinum resistance, pressure independent temperature sensor. The sensor has a response time of 0.25 seconds, with an accuracy of  $\pm 0.1^{\circ}\text{F}$  ( $0.05^{\circ}\text{C}$ ). An oil filled strain gauge pressure transducer accurate to 0.3% (full scale) is used to determine depth of the instrument (TSK, 1985). Temperature and depth data are collected at five-second intervals. All data are recorded in internal IC memory. Data were retrieved after the test using a photomagnetic coupler and microcomputer.

The positions during the thermal plume mapping were determined with a Motorola MiniRanger III system. The MiniRanger III system is a range-range navigation system, with an accuracy of  $\pm 0.5$  m when used with a data processor.

Intake and discharge temperatures were measured using Sea Data TR-2 temperature recorders. The Sea Data units have a manufacturer's specified accuracy of  $\pm 0.2^{\circ}\text{F}$  ( $0.1^{\circ}\text{C}$ ) with a response time of two seconds (Sea Data, 1984). The temperature sensor at the intake is located 100 feet from the intake structure in 10 feet of water (MLLW). The discharge temperatures are measured on the side walls of the discharge structure, near



the end weir (north wall for Unit 1 and the south wall for Unit 2).

Temperature and position data were merged and surface isotherms, in degrees above intake temperature ( $\Delta T$ ), were computer generated (Figure 1). Discharge volumes reported for Units 1 and 2 are the circulating water pump volumes. The area covered by each 2°F isotherm was calculated and is presented in Table 1. When an isotherm is not completely enclosed within the sampling boundary, the boundary is used as the limit in determining the areal extent of the contour (White, 1986). These values are within the range of isotherm areas reported by Tu et al (1986).



# Diablo Canyon Power Plant Surface Water Temperature 2°F Isotherms ( $\Delta T$ )

Survey Date: October 22, 1987

Time Period: 0907-1104

Intake Temperature: 62.5°F

Plant Conditions:

Unit	Discharge Temp (°F)	Cooling Water Flow (cfs)	Reactor Power (%)
1	81.8	2000	100
2	81.4	2000	100

Environmental Conditions:

Tide: 5.5-5.8-5.5 feet above MLLW (high)

Wind: 8.4 mph from 324° (true)

Offshore Currents (by drogue): 24.7 feet per minute 131° (true)

Waves: ( $H_{1/3}$ ) 75 cm 8.4 sec from 212° (true)

Air Temperature: 65.6°F

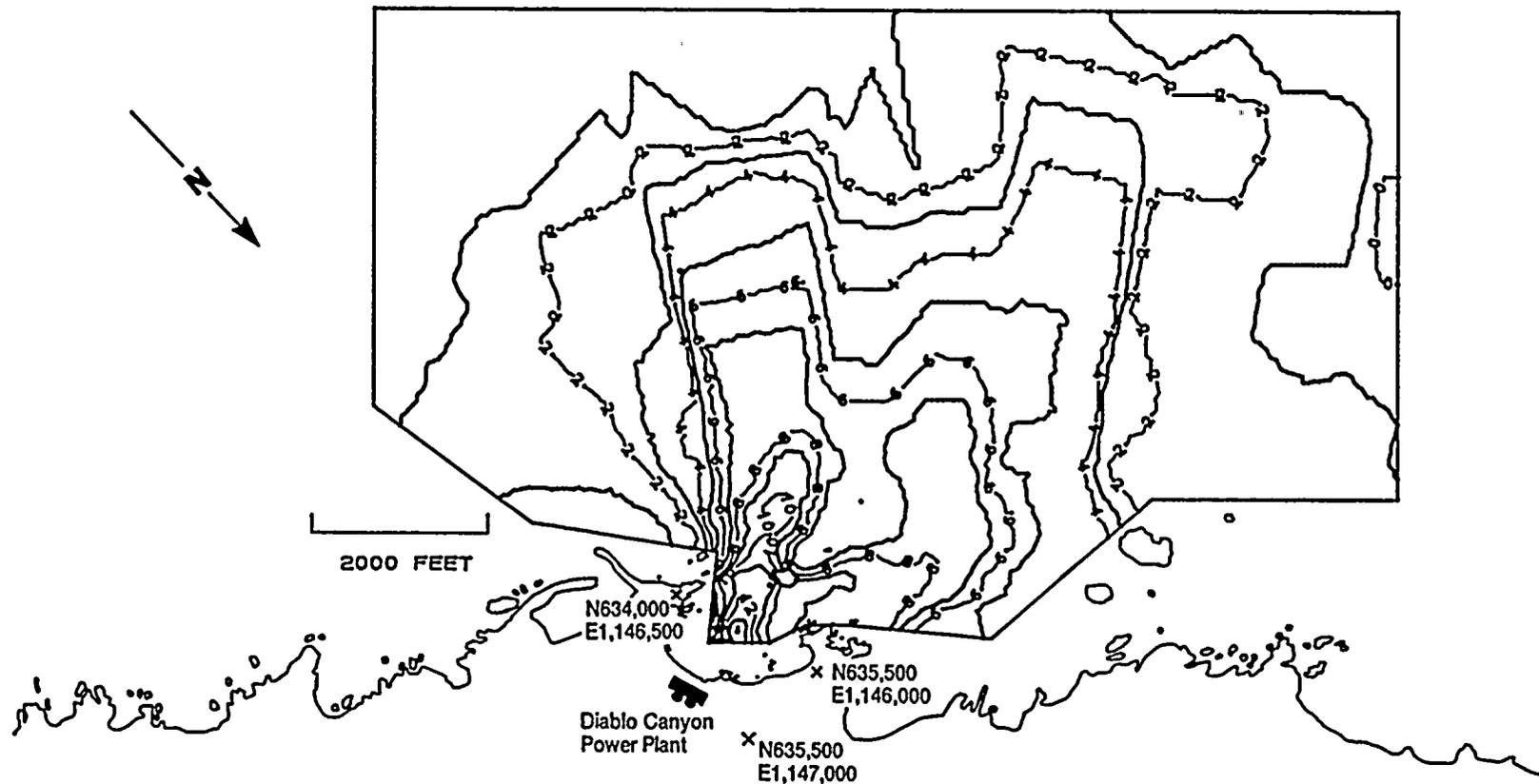




TABLE 1

CUMULATIVE ISOTHERMS AREAS  
(IN ACRES)

2° ISOTHERMS

<u>2°</u>	<u>4°</u>	<u>6°</u>	<u>8°</u>	<u>10°</u>	<u>12°</u>
761.3	484.6	227.8	65.2	10.1	2.9



#### REFERENCES

- Sea Data. Sea Data Oceanographic Instrumentation, Micro-Logger Users Manual. 1984.
- TSK. Towable Bayththermograph, Operation Manual. 1985
- Tu, S. W., J. P. Leighton, C. O. White and C. C. Hsu. Surface Buoyant Jet Characteristics of the Thermal Discharge Plume at Diablo Canyon Power Plant. A Field Study of Power Ascension Testing of Unit 2 and Full Load Operation of Unit 1". In Environmental Investigations at Diablo Canyon, 1986, Volume 2 - Oceanographic and Environmental Engineering Studies. PGandE, 1986. (Edited by C. O. White and D. W. Behrens).
- White, C. O. Measurement of Surface Temperatures and Isotherm Contour Development. In Oceanographic Procedures Manual. PGandE, 1986. (Edited by E. M. Kenzler).



APPENDIX 4

Stratified Water Temperatures  
October 20, 1987



Stratified Water Temperatures  
October 20, 1987

Temperature profiles were collected at 12 stations offshore of Diablo Canyon (Figure 1). An electronic bathythermograph (MICOM-BT) was used to collect temperature profile data. The MICOM-BT is a self-contained underwater unit. The MICOM-BT uses a platinum resistance, pressure independent temperature sensor. The sensor has a response time of 0.25 seconds, with a accuracy of  $\pm 0.1^{\circ}\text{F}$  ( $0.05^{\circ}\text{C}$ ). An oil-filled strain gauge pressure transducer, accurate to 0.3% (full scale), is used to determine the depth of the instrument (TSK, 1985). Temperature and depth data are reported in one meter intervals. All data are recorded in a internal IC memory circuit. Data were retrieved after each profile using a photomagnetic coupler and microcomputer. Reference temperatures were taken with a bucket and/or digital thermometer (NBS traceable).

Seawater temperatures ranged from a high of  $71.1^{\circ}\text{F}$  near the surface at Station 10 to a low of  $55.1^{\circ}\text{F}$ , one-half meter above the bottom at Station 4C. The ambient temperatures were the highest recorded offshore of Diablo Canyon in October since the El Niño years of 1982-1983 (White, 1983; 1984; 1985; 1986; 1987). There was very little stratification in temperatures through the water column at the offshore stations (3A through 5C). The higher temperatures are normally indicative of the onset of the Davidson Period, which is a northward flow that develops off the California coast in late fall or early winter (White and Day, 1986). However, the dissolved oxygen levels obtained during the same period are higher than those expected



for the Davidson Period (Hickey, 1979). This suggests that a the Davidson current is not fully developed in the nearshore region off Diablo Canyon.



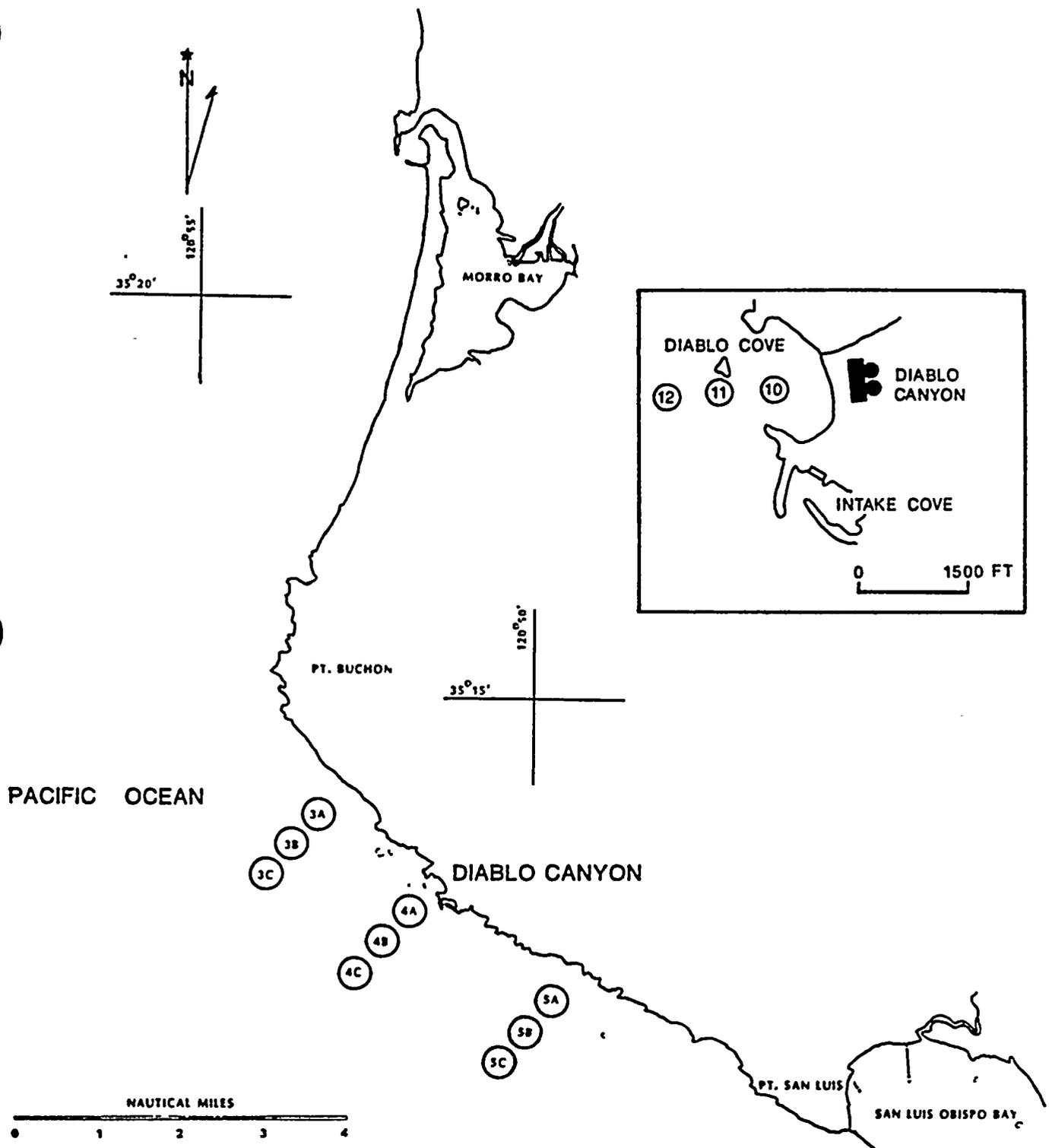


Figure 1 WATER TEMPERATURE, PH, AND DISSOLVED OXYGEN  
SAMPLE LOCATIONS



## REFERENCES

- Hickey, Barabra M. 1979. The California Current System -Hypothesis and Facts. Prog. Oceanog., Vol 8, pp 191-279, Pergaman Press.
- TSK. TSK MICOM Bathythermograph, Operation Manual. 1985
- White, Charles O. 1983. Oceanographic Studies, 1982. Diablo Canyon Power Plant. In: Environmental Investigations at Diablo Canyon, 1982.
- White, Charles O. 1984. Oceanographic Studies, 1983. Diablo Canyon Power Plant. In: Environmental Investigations at Diablo Canyon, 1983.
- White, Charles O. 1985. Oceanographic Studies at Diablo Canyon Power Plant, 1984. In: Environmental Investigations at Diablo Canyon, 1984.
- White, Charles O and Leslie D. Day. 1986. Seawater Densities in the Vicinity of Diablo Canyon Power Plant. In: Environmental Investigations at Diablo Canyon, 1985.
- White, Charles O. 1986. Oceanographic Studies Offshore of Diablo Canyon Power Plant, 1985. In: Environmental Investigations at Diablo Canyon, 1985.
- White, Charles O. 1987. Oceanographic Studies Offshore of Diablo Canyon Power Plant, 1986. In: Environmental Investigations at Diablo Canyon, 1986.



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
STRATIFIED WATER TEMPERATURES  
OCTOBER 20, 1987

STATION 3A

DEPTH (m)	TEMP (°F)
0.0	61.0
1.0	60.5
2.0	60.4
3.0	60.3
4.0	60.2
5.0	60.1
6.0	60.0
7.0	59.9
8.0	59.7
9.0	59.6
10.0	59.6
11.0	59.5
12.0	59.5
13.0	59.4
14.0	59.3
15.0	59.1
16.0	59.0
17.0	58.8
18.0	58.3
19.0	58.2
20.0	58.1
21.0	58.0
22.0	57.9
23.0	57.8
24.0	57.6
25.0	57.5
26.0	57.5
27.0	57.4
28.0	57.3
29.0	57.1
30.0	57.0
31.0	56.9
32.0	56.7
33.0	56.6
34.0	56.4
35.0	56.3
36.0	56.2
37.0	56.0
38.0	55.9



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
STRATIFIED WATER TEMPERATURES  
OCTOBER 20, 1987

STATION 3B

DEPTH (m)	TEMP (°F)	DEPTH (m)	TEMP (°F)
0.0	61.1	40.0	58.1
1.0	61.0	41.0	58.0
2.0	60.9	42.0	57.8
3.0	60.8	43.0	57.8
4.0	60.4	44.0	57.5
5.0	60.3	45.0	57.2
6.0	60.2	46.0	57.0
7.0	60.2	47.0	56.9
8.0	60.1	48.0	56.7
9.0	60.1	49.0	56.5
10.0	60.1	50.0	56.0
11.0	60.0	51.0	55.7
12.0	60.0		
13.0	60.0		
14.0	59.9		
15.0	59.8		
16.0	59.7		
17.0	59.7		
18.0	59.7		
19.0	59.6		
20.0	59.6		
21.0	59.5		
22.0	59.5		
23.0	59.4		
24.0	59.4		
25.0	59.3		
26.0	59.4		
27.0	59.4		
28.0	59.5		
29.0	59.4		
30.0	59.4		
31.0	59.4		
32.0	59.3		
33.0	59.3		
34.0	59.2		
35.0	59.0		
36.0	58.8		
37.0	58.7		
38.0	58.6		
39.0	58.2		



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
STRATIFIED WATER TEMPERATURES  
OCTOBER 20, 1987

STATION 3C

DEPTH (m)	TEMP (°F)	DEPTH (m)	TEMP (°F)
0.0	62.5	40.0	56.9
1.0	62.4	41.0	56.7
2.0	62.3	42.0	56.5
3.0	62.0	43.0	56.4
4.0	61.8	44.0	56.2
5.0	61.7	45.0	56.0
6.0	61.3	46.0	55.8
7.0	61.2	47.0	55.8
8.0	61.1	48.0	55.8
9.0	61.1	49.0	55.7
10.0	61.1	50.0	55.7
11.0	61.1	51.0	55.7
12.0	61.0	52.0	55.7
13.0	60.9	53.0	55.7
14.0	60.9	54.0	55.7
15.0	60.9	55.0	55.7
16.0	60.8	56.0	55.6
17.0	60.7	57.0	55.5
18.0	60.7	58.0	55.3
19.0	60.6	59.0	55.3
20.0	60.5	60.0	55.3
21.0	60.4	61.0	55.3
22.0	60.2	62.0	55.3
23.0	60.1	63.0	55.2
24.0	60.0	64.0	55.1
25.0	59.9	65.0	55.2
26.0	59.1	66.0	55.1
27.0	58.8	67.0	55.1
28.0	58.6	68.0	55.1
29.0	58.4	69.0	55.1
30.0	58.1		
31.0	57.9		
32.0	57.7		
33.0	57.5		
34.0	57.3		
35.0	57.2		
36.0	57.1		
37.0	57.1		
38.0	57.1		
39.0	57.1		



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
STRATIFIED WATER TEMPERATURES  
OCTOBER 20, 1987

STATION 4A

DEPTH (m)	TEMP (°F)
0.0	64.3
1.0	63.8
2.0	62.8
3.0	61.8
4.0	61.0
5.0	60.4
6.0	60.1
7.0	59.8
8.0	59.6
9.0	59.5
10.0	59.4
11.0	59.2
12.0	59.2
13.0	59.0
14.0	58.8
15.0	58.8
16.0	58.8
17.0	58.7
18.0	58.6
19.0	58.4
20.0	58.4
21.0	58.4
22.0	58.4
23.0	58.4
24.0	58.4
25.0	58.2
26.0	58.0
27.0	57.8
28.0	57.7
29.0	57.5
30.0	57.4
31.0	57.2
32.0	57.0
33.0	56.8
34.0	56.6



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
STRATIFIED WATER TEMPERATURES  
OCTOBER 20, 1987

STATION 4B

DEPTH (m)	TEMP (°F)	DEPTH (m)	TEMP (°F)
0.0	61.2	40.0	57.0
1.0	61.2	41.0	56.9
2.0	60.8	42.0	56.8
3.0	60.2	43.0	56.7
4.0	60.2	44.0	56.5
5.0	60.1	45.0	56.2
6.0	60.0	46.0	56.1
7.0	59.7	47.0	56.0
8.0	59.6	48.0	55.9
9.0	59.6	49.0	55.9
10.0	59.5	50.0	55.8
11.0	59.4	51.0	55.7
12.0	59.3	52.0	55.7
13.0	59.3		
14.0	59.3		
15.0	59.2		
16.0	59.2		
17.0	59.2		
18.0	59.1		
19.0	59.1		
20.0	59.1		
21.0	58.9		
22.0	58.7		
23.0	58.6		
24.0	58.4		
25.0	58.2		
26.0	58.1		
27.0	58.0		
28.0	57.9		
29.0	57.9		
30.0	57.8		
31.0	57.8		
32.0	57.7		
33.0	57.6		
34.0	57.5		
35.0	57.5		
36.0	57.4		
37.0	57.3		
38.0	57.3		
39.0	57.2		



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
STRATIFIED WATER TEMPERATURES  
OCTOBER 20, 1987

. STATION 4C

DEPTH (m)	TEMP (°F)	DEPTH (m)	TEMP (°F)
0.0	62.1	40.0	56.4
1.0	62.1	41.0	56.3
2.0	61.8	42.0	56.2
3.0	61.7	43.0	56.2
4.0	61.6	44.0	56.1
5.0	61.5	45.0	56.1
6.0	61.4	46.0	56.0
7.0	61.3	47.0	56.0
8.0	61.3	48.0	56.0
9.0	61.3	49.0	56.0
10.0	61.0	50.0	56.0
11.0	60.9	51.0	55.9
12.0	60.8	52.0	55.8
13.0	60.7	53.0	55.8
14.0	60.6	54.0	55.8
15.0	60.4	55.0	55.8
16.0	60.2	56.0	55.8
17.0	60.1	57.0	55.8
18.0	59.8	58.0	55.8
19.0	59.4	59.0	55.8
20.0	59.1	60.0	55.8
21.0	59.0	61.0	55.5
22.0	58.6	62.0	55.3
23.0	58.4	63.0	55.2
24.0	58.0	64.0	55.2
25.0	57.8		
26.0	57.7		
27.0	57.7		
28.0	57.6		
29.0	57.6		
30.0	57.4		
31.0	57.4		
32.0	57.3		
33.0	57.2		
34.0	57.1		
35.0	57.0		
36.0	56.8		
37.0	56.7		
38.0	56.6		
39.0	56.6		



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
STRATIFIED WATER TEMPERATURES  
OCTOBER 20, 1987

STATION 5A

DEPTH (m)	TEMP (°F)
0.0	60.9
1.0	60.5
2.0	60.0
3.0	59.9
4.0	59.9
5.0	59.8
6.0	59.6
7.0	59.6
8.0	59.5
9.0	59.4
10.0	59.3
11.0	59.3
12.0	59.4
13.0	59.4
14.0	59.3
15.0	59.3
16.0	59.2
17.0	59.1
18.0	58.9
19.0	58.7
20.0	58.4
21.0	58.0
22.0	57.7
23.0	57.6



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
STRATIFIED WATER TEMPERATURES  
OCTOBER 20, 1987

STATION 5B

DEPTH (m)	TEMP (°F)
0.0	61.8
1.0	60.9
2.0	61.1
3.0	61.0
4.0	60.5
5.0	60.5
6.0	60.3
7.0	60.2
8.0	60.0
9.0	60.0
10.0	59.9
11.0	59.8
12.0	59.8
13.0	59.8
14.0	59.8
15.0	59.7
16.0	59.7
17.0	59.6
18.0	59.6
19.0	59.5
20.0	59.4
21.0	59.3
22.0	59.2
23.0	59.1
24.0	58.9
25.0	58.6
26.0	58.6
27.0	57.9
28.0	57.6
29.0	57.6



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
STRATIFIED WATER TEMPERATURES  
OCTOBER 20, 1987

STATION 5C

DEPTH (m)	TEMP (°F)
0.0	61.0
1.0	60.8
2.0	60.8
3.0	60.7
4.0	60.7
5.0	60.6
6.0	60.5
7.0	60.5
8.0	60.4
9.0	60.2
10.0	60.1
11.0	60.0
12.0	59.7
13.0	59.6
14.0	59.6
15.0	59.6
16.0	59.6
17.0	59.6
18.0	59.6
19.0	59.6
20.0	59.6
21.0	59.5
22.0	59.3
23.0	59.2
24.0	59.1
25.0	59.0
26.0	58.9
27.0	58.7
28.0	58.6
29.0	58.5
30.0	58.3
31.0	57.8
32.0	57.6
33.0	57.5
34.0	57.5
35.0	57.5
36.0	57.5



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
STRATIFIED WATER TEMPERATURES  
OCTOBER 20, 1987

STATION 10

DEPTH (m)	TEMP (°F)
0.0	71.1
1.0	68.1
2.0	67.1
3.0	65.6
4.0	64.3
5.0	63.8
6.0	62.3
7.0	60.6



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
STRATIFIED WATER TEMPERATURES  
OCTOBER 20, 1987

STATION 11

DEPTH (m)	TEMP (°F)
0.0	70.0
1.0	69.9
2.0	69.6
3.0	69.4
4.0	69.5
5.0	69.2
6.0	68.8
7.0	65.2
8.0	61.4
9.0	59.8
10.0	59.5
11.0	59.3
12.0	58.7
13.0	58.7
14.0	58.7



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
STRATIFIED WATER TEMPERATURES  
OCTOBER 20, 1987

STATION 12

DEPTH (m)	TEMP (°F)
0.0	69.6
1.0	68.9
2.0	67.0
3.0	64.4
4.0	61.8
5.0	61.3
6.0	60.5
7.0	60.3
8.0	60.3
9.0	60.2
10.0	60.0
11.0	59.6
12.0	59.4
13.0	59.3
14.0	59.2
15.0	59.2
16.0	59.1
17.0	58.9
18.0	58.9
19.0	58.8
20.0	58.6



APPENDIX 5

pH and Dissolved Oxygen of the  
Receiving Waters

October 20, 1987



pH and Dissolved Oxygen of  
the Receiving Waters  
October 20, 1987

Water samples for determination of dissolved oxygen concentrations and pH levels were collected at 12 stations offshore of Diablo Canyon (Figure 1). A hydrocast array of Van Dorn bottles was used to collect water samples to determine pH levels and dissolved oxygen concentrations. These samples were collected just below the surface, at mid-depth, and at 0.5 m above the bottom. The dissolved oxygen samples were immediately preserved with alkaline iodide azide and manganous sulfate. Samples were then transported to the onsite oceanography laboratory for processing.

Dissolved oxygen concentrations were determined using a Standard Winkler Titration, Azide Modification Method. The pH measurements were made with an Orion Model 407A pH meter.

pH levels during the October 1987 oceanographic studies ranged between 7.7 and 8.0. Dissolved oxygen levels ranged from a high of 8.2 ppm at the surface at Stations 3C and 5A to a low of 6.0 ppm for the bottom value at Station 3C.



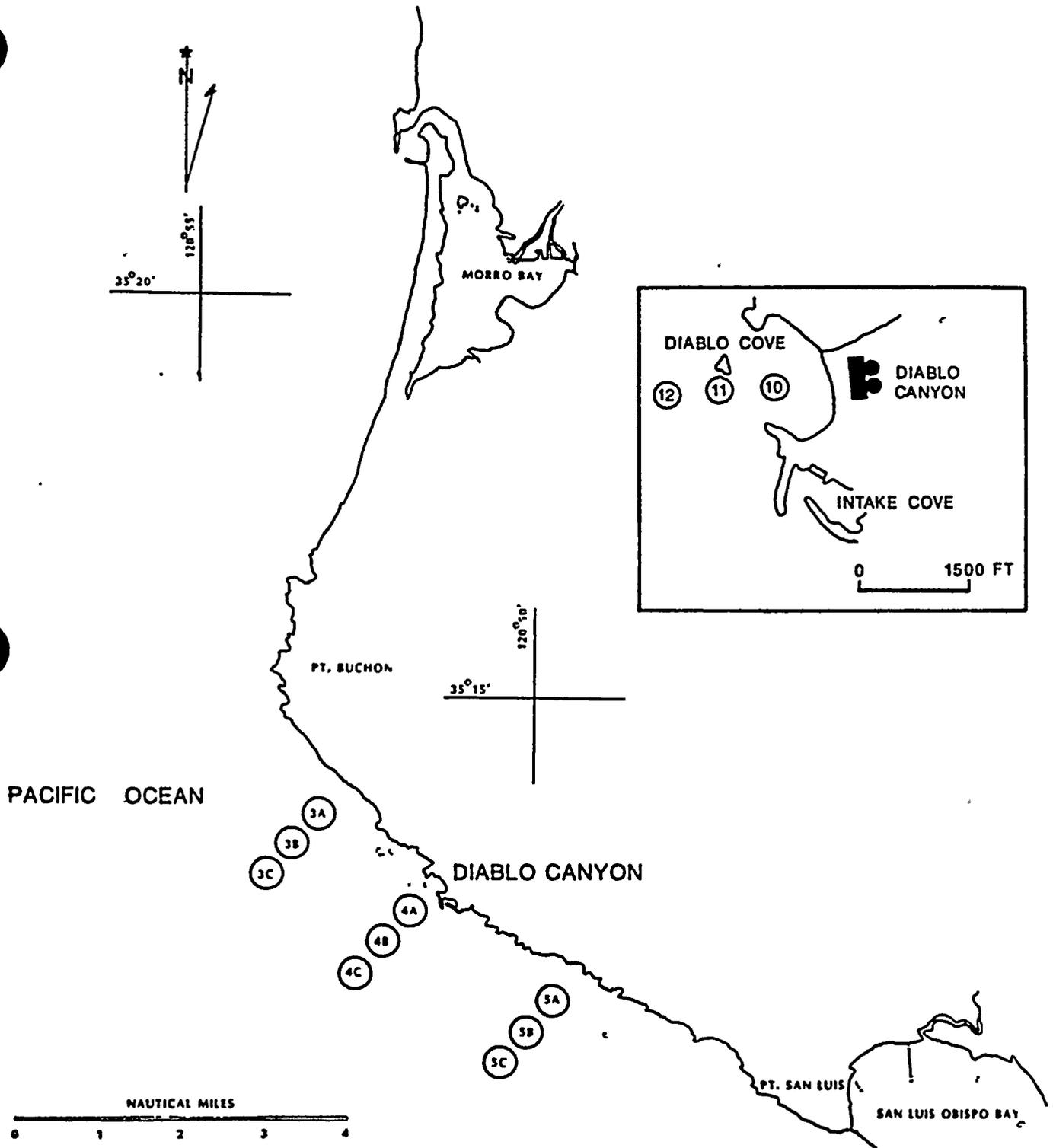


Figure 1 WATER TEMPERATURE, PH, AND DISSOLVED OXYGEN SAMPLE LOCATIONS



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
OCTOBER 1987  
pH DETERMINATIONS

STATION	TOP	MIDDLE	BOTTOM
3A	7.9	7.9	7.9
3B	7.9	8.0	7.9
3C	7.9	7.9	7.8
4A	7.7	7.9	7.9
4B	7.9	7.9	7.8
4C	8.0	7.9	7.9
5A	7.9	7.9	7.9
5B	7.9	8.0	7.9
5C	8.0	8.0	7.9
10	7.7	7.9	8.0
11	7.8	7.9	7.9
12	7.8	7.9	7.9



DIABLO CANYON POWER PLANT  
OCEANOGRAPHIC STATIONS  
DISSOLVED OXYGEN CONCENTRATIONS  
OCTOBER 20, 1987

STATION	TOP	MIDDLE	BOTTOM
3A	7.9	7.45	6.4
3B	8.1	7.6	6.4
3C	8.2	6.8	6.0
4A	7.6	7.4	6.8
4B	8.0	7.2	6.8
4C	7.8	7.1	6.4
5A	8.2	7.95	6.6
5B	7.7	8.0	6.6
5C	8.1	7.8	7.6
10	7.2	7.4	7.5
11	7.3	7.2	7.6
12	7.2	7.8	7.6

