PEACH BOTTOM ATOMIC POWER STATION

MONTHLY REPORT NO. 69

FOR

MARCH 1979

THERMAL AND BIOLOGICAL

MONITORING PROGRAMS

FOR

UNITS NO. 2 AND 3

PHILADELPHIA ELECTRIC COMPANY

MONTHLY REPORT NO. 69 FOR MARCH, 1979
THERMAL AND BIOLOGICAL MONITORING PROGRAMS
PEACH BOTTOM ATOMIC POWER STATION
UNITS NO. 2 AND 3

This report includes the thermograph data for the months of December 1978, and January, February and March, 1979. The monthly mean delta T temperatures (above ambient) for the state line minus the S2 location are itemized below:

Month	Hourly OBS	Delta T -°F
December	715	2.75
January	744	0.92
February	578	3.37
March	0	-

During this period severe icing conditions occurred on Conowingo Pond which prevented normal monthly servicing of the thermal instrumentation and thus many of the thermographs ran out of film by the end of February. The tables of thermograph statistics and exceptions for their months are included herein (Table 1 to 8). Figure 1 shows the instrument and survey locations.

The daily river flows as measured at Holtwood Hydroelectric Station and the daily generation at PBAPS in thermal megawatts for the March reporting period are presented in Table 9.

Figures 2 and 3 are isotherm plots, which include three (3) horizontal sections of boat surveys made during the March recording period. Boat survey information is tabulated in Table 10. Surveys for this period were started at the north end of Conowingo Pond. The delta T at the state line indicated on the isotherms is calculated by subtracting the Holtwood Dam temperature and the hourly Confidence Limit (applicable to the mid-survey time) from the state line temperature. This delta T can be interpreted as being caused by PBAPS since ambient hourly variations at the state line have been considered.

Although the isotherm plots do not cover the entire reporting period on a daily, hour-by-hour basis and cannot be used as a continuous indication of temperature variation, they do represent a fair treatment of typical plume characteristics. In addition, they may also be used as an empirical tool in estimating probable plume patterns in advance of certain natural and plant operating conditions.

Table 11 lists the results of analysis of Susquehanna River water for heavy metals during the months of July through December, 1978. Acidified samples were collected by the PECO Chemical Laboratory at the station intake, upstream of the station intake, and at the circulation water system discharge to Conowingo Pond.

Chlorination data for the months when the units were chlorinated are shown in Tables 12. Table 13 lists the results of the monthly survey of chlorine residual determinations made on samples taken at the discharge to the river during chlorination of the plant.

TABLE 1

SUMMARY OF HOURLY CONOWINGO POND WATER TEMPERATURES -DEC,1978

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
HW_FLOW	744	31196.77	12435.94	16500.00	61300.00
MW_THERM	744	6351.68	474.84	4505.00	6582.00
S2	715	2.66	1.74	0.10	6.50
S13	721	4.21	2.14	0.20	8.70
S13A	720	4.06	1.82	0.40	8.40
S30	742	3.18	1.75	0.10	7.00
S31	742	14.76	1.17	12.30	17.40
S32	742	13.30	1.20	11.10	16.90
D13_2	715	1.32	1.15	-1.10	4.90
D13_13A	720	0.15	0.75	-3.50	2.10
D31_30	742	11.58	1.58	6.30	15.20
D32_30	742	10.12	1.39	6.00	14.00
D31_32	742	1.45	0.79	-3.50	3.80
S13S	721	4.21	2.14	0.20	8.70
DS13S_S2	715	1.32	1.15	-1.10	4.90

TABLE 2

SUMMARY OF HOURLY CONOWINGO POND WATER TEMPERATURES -JAN,1979

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
HW_FLOW	744	100487.10	70204.00	24300.00	264500.00
MW_THERM	744	5355.06	1369.74	3122.00	6595.00
S2	744	0.34	0.51	-0.30	2.20
S13	744	0.73	0.95	0.00	5.30
S13A	744	1.04	1.22	-0.20	4.60
S30	742	0.81	0.69	0.00	4.10
S31	742	13.00	2.86	5.50	21.70
S32	742	12.17	2.49	5.80	18.80
D13_2	744	0.40	0.86	-1.40	4.60
D13_13A	744	-0.31	0.82	-3.30	1.30
D31_30	742	12.19	2.64	5.30	21.40
D32_30	742	11.35	2.30	5.30	18.40
D31_32	742	0.83	1.00	-5.90	6.90
S13S	744	0.73	0.95	0.00	5.30
DS13S_S2	744	0.40	0.86	-1.40	4.60

TABLE 3

SUMMARY OF HOURLY CONOWINGO POND WATER TEMPERATURES -FEB,1979

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
HW_FLOW	672	45839.29	55300.92	14200.00	213100.00
MW_THERM	672	5824.39	1192.65	3288.00	6583.00
S2	672	0.10	0.23	-0.20	1.40
S13	576	1.95	1.12	0.00	5.00
S13A	501	2.60	0.93	0.00	4.90
S30	668	0.83	0.61	0.10	3.20
S31	669	14.06	1.64	7.20	17.40
S32	666	13.53	1.40	7.90	15.70
D13_2	578	1.84	1.18	-0.40	4.90
D13_13A	501	-0.67	0.81	-3.40	1.70
D31_30	668	13.22	1.61	6.70	15.00
D32_30	667	12.70	1.50	7.10	15.10
D31_32	668	0.53	0.91	-4.70	4.50
S13S	578	1.95	1.12	0.00	5.00
DS13S_S2	578	1.84	1.18	-0.40	4.90

TABLE 4

SUMMARY OF HOURLY CONOWINGO POND WATER TEMPERATURES -MAR,1979

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
HW_FLOW	744	143932.26	102952.12	56100.00	464100.00
MW_THERM	744	5434.39	1353.23	3137.00	6586.00
S2	744	5.37	2.59	0.10	10.60
S13	0	.	.	.	.
S13A	0	.	.	.	.
S30	743	6.04	2.29	1.10	10.30
S31	744	17.48	3.03	8.90	21.20
S32	744	17.23	1.79	12.10	21.10
D13_2	0	.	.	.	.
D13_13A	0	.	.	.	.
D31_30	743	11.44	3.45	3.70	14.90
D32_30	743	11.20	2.08	5.30	14.70
D31_32	744	0.25	1.92	-7.80	4.50
S13S	0	.	.	.	.
DS13S_S2	0	.	.	.	.

TABLE 5

PBAPS IMPACT HOURS ABOVE DECEMBER CONFIDENCE LIMITS

OBS	YEAR	MONTH	DAY	HOUR	S2	S13I	D13_2	HW_FLOW	MW_THERM	STATUS	CLI3_2	EXI3_2	IMPI3_2
1	73	12	1	17	7.3	8.3	1.0	51800	.	PRE_OP	0.9	0.1	0.18
2	73	12	1	18	7.0	8.2	1.2	51800	.	PRE_OP	1.0	0.2	0.36
3	73	12	1	19	6.8	8.1	1.3	51800	.	PRE_OP	1.0	0.3	0.54
4	73	12	1	20	6.8	8.1	1.3	51800	.	PRE_OP	1.0	0.3	0.54
5	78	12	4	12	4.5	8.7	4.2	18000	6574	POST_OP	0.6	3.4	1.08
6	78	12	4	13	4.5	8.7	4.2	18000	6574	POST_OP	0.6	3.4	1.08
7	78	12	4	14	4.5	8.6	4.1	18000	6574	POST_OP	0.8	3.3	0.90
8	78	12	4	15	4.7	8.5	3.8	18000	6574	POST_OP	0.8	3.0	0.36
9	78	12	17	20	2.1	6.7	4.6	32300	6517	POST_OP	1.0	3.6	1.44
10	78	12	17	21	2.1	6.9	4.8	32300	6517	POST_OP	0.8	4.0	2.16
11	78	12	17	22	2.1	6.8	4.7	32300	6517	POST_OP	0.8	3.9	1.98
12	78	12	17	23	2.1	6.0	3.9	32300	6517	POST_OP	0.8	3.1	0.54
13	78	12	17	24	2.0	5.8	3.8	32300	6517	POST_OP	0.8	3.0	0.36
14	78	12	21	19	2.3	6.2	3.9	23000	6573	POST_OP	1.0	2.9	0.18
15	78	12	24	11	1.7	5.4	3.7	26700	6553	POST_OP	0.8	2.9	0.18
16	78	12	30	11	0.3	4.3	4.0	22200	6475	POST_OP	0.8	3.2	0.72
17	78	12	30	12	0.2	4.4	4.2	22200	6475	POST_OP	0.8	3.4	1.08
18	78	12	30	13	0.1	4.4	4.3	22200	6475	POST_OP	0.8	3.5	1.26
19	78	12	30	14	0.2	3.9	.	22200	6475	POST_OP	0.8	2.9	0.18
20	78	12	31	15	0.6	4.9	4.3	23100	6456	POST_OP	0.8	3.5	1.26
21	78	12	31	16	0.5	5.1	4.6	23100	6456	POST_OP	0.9	3.7	1.62
22	78	12	31	17	0.4	5.3	4.9	23100	6456	POST_OP	0.9	4.0	2.16

Definitions:

S = Thermograph
D = Delta T (C°)
HWFLOW = Holtwood Daily River Flow (CFS)
MWTHERM = Daily Thermal Generation of PBAPS (Megawatts)
CL = Confidence Limit (C°)
EX = Exceptions (C°)
IMP = Impact (F°)

TABLE 6

PBAPS IMPACT HOURS ABOVE JANUARY CONFIDENCE LIMITS

OBS	YEAR	MONTH	DAY	HOUR	S2	S13I	D13_2	MW_FLOW	MW_THERM	STATUS	CL13_2	EX13_2	IMP13_2
1	79	1	1	11	0.6	4.6	4.0	24300	6469	POST_OP	0.7	3.3	0.60
2	79	1	1	12	0.6	4.9	4.3	24300	6469	POST_OP	0.7	3.6	1.44
3	79	1	1	13	0.6	5.1	4.5	24300	6469	POST_OP	0.7	3.8	1.80
4	79	1	1	14	0.7	5.3	4.6	24300	6469	POST_OP	0.7	3.9	1.98
5	79	1	1	15	0.7	5.2	4.5	24300	6469	POST_OP	0.6	3.9	1.98
6	79	1	1	16	0.7	5.3	4.6	24300	6469	POST_OP	0.7	3.9	1.98
7	79	1	1	17	0.7	5.3	4.6	24300	6469	POST_OP	0.7	3.9	1.98
8	79	1	1	18	0.7	4.8	4.1	24300	6469	POST_OP	0.8	3.3	0.90
9	79	1	1	24	0.9	4.6	3.7	24300	6469	POST_OP	0.6	3.1	0.54
10	79	1	2	3	1.2	4.8	3.6	41800	6467	POST_OP	0.6	3.0	0.36
11	79	1	2	4	1.2	4.9	3.7	41800	6467	POST_OP	0.5	3.2	0.72
12	79	1	21	7	0.1	3.8	3.7	50700	6575	POST_OP	0.7	3.0	0.36
13	79	1	21	8	0.1	3.8	3.7	50700	6575	POST_OP	0.7	3.0	0.36
14	79	1	21	9	0.1	3.8	3.7	50700	6575	POST_OP	0.7	3.0	0.36
15	79	1	21	10	0.1	4.1	4.0	50700	6575	POST_OP	0.7	3.3	0.90
16	79	1	21	11	0.0	4.4	4.4	50700	6575	POST_OP	0.7	3.7	1.62

Definitions:

S = Thermograph
D = Delta T (C^0)
MWFLOW = Holtwood Daily River Flow (CFS)
MWTHERM = Daily Thermal Generation of PBAPS (Megawatts)
CL = Confidence Limit (C^0)
EX = Exceptions (C^0)
IMP = Impact (F^0)

TABLE 7

PBAPS IMPACT HOURS ABOVE FEBRUARY CONFIDENCE LIMITS

OBS	YEAR	MONTH	DAY	HOUR	S2	S13I	G13_2	RW_FLOW	MW_THERM	STATUS	CL13_2	EX13_2	IMP13_2
1	73	2	28	11	0.5	1.5	1.0	22800	.	PRE_OP	0.6	0.4	0.72
2	73	2	28	12	0.6	1.5	0.9	22800	.	PRE_OP	0.6	0.3	0.54
3	73	2	28	13	0.7	1.7	1.0	22800	.	PRE_OP	0.6	0.4	0.72
4	73	2	28	14	0.9	1.6	0.7	22800	.	PRE_OP	0.6	0.1	0.18
5	73	2	28	21	1.0	1.6	0.6	22800	.	PRE_OP	0.5	0.1	0.18
6	73	2	28	23	0.8	1.6	0.8	22800	.	PRE_OP	0.7	0.1	0.18
7	73	2	28	24	0.8	1.6	0.8	22800	.	PRE_OP	0.7	0.1	0.18
8	79	2	2	9	0.0	4.4	4.4	55500	6568	POST_OP	0.4	4.0	2.16
9	79	2	4	4	-0.1	3.4	3.5	44300	6477	POST_OP	0.6	2.9	0.18
10	79	2	4	5	-0.1	3.6	3.7	44300	6477	POST_OP	0.6	3.1	0.54
11	79	2	4	6	-0.1	3.8	3.9	44300	6477	POST_OP	0.5	3.4	1.08
12	79	2	4	7	0.0	3.8	3.8	44300	6477	POST_OP	0.5	3.3	0.90
13	79	2	4	8	0.1	3.8	3.7	44300	6477	POST_OP	0.4	3.3	0.90
14	79	2	4	9	0.1	3.8	3.7	44300	6477	POST_OP	0.4	3.3	0.90
15	79	2	4	10	0.2	3.7	3.5	44300	6477	POST_OP	0.4	3.1	0.54
16	79	2	6	8	-0.1	3.5	3.6	22200	6583	POST_OP	0.4	3.0	0.36
17	79	2	7	3	0.1	3.9	3.8	22300	6583	POST_OP	0.7	3.1	0.54
18	79	2	7	8	0.1	3.5	3.4	22300	6583	POST_OP	0.4	3.0	0.36
19	79	2	7	9	0.1	5.0	4.9	22300	6583	POST_OP	0.4	4.5	3.06
20	79	2	8	1	0.0	3.7	3.7	23200	6583	POST_OP	0.7	3.0	0.36
21	79	2	8	2	0.0	3.7	3.7	23200	6583	POST_OP	0.7	3.0	0.36
22	79	2	8	7	0.1	3.6	3.5	23200	6583	POST_OP	0.5	3.0	0.36
23	79	2	8	8	0.1	3.6	3.5	23200	6583	POST_OP	0.4	3.1	0.54
24	79	2	8	17	0.0	3.7	3.7	23200	6583	POST_OP	0.5	3.2	0.72
25	79	2	9	2	0.0	3.9	3.9	22900	6274	POST_OP	0.7	3.2	0.72
26	79	2	9	3	0.0	3.8	3.8	22900	6274	POST_OP	0.7	3.1	0.54
27	79	2	9	4	0.0	3.7	3.7	22900	6274	POST_OP	0.6	3.1	0.54
28	79	2	9	5	0.0	3.6	3.6	22900	6274	POST_OP	0.6	3.0	0.36
29	79	2	9	6	0.0	3.5	3.5	22900	6274	POST_OP	0.5	3.0	0.36
30	79	2	9	7	0.0	3.5	3.5	22900	6274	POST_OP	0.5	3.0	0.36
31	79	2	10	9	0.1	3.5	3.4	19600	3460	POST_OP	0.4	3.0	0.36
32	79	2	11	18	0.2	3.7	3.5	17500	3288	POST_OP	0.4	3.1	0.54
33	79	2	11	19	0.1	4.3	4.2	17500	3288	POST_OP	0.5	3.7	1.62
34	79	2	11	20	0.1	3.8	3.7	17500	3288	POST_OP	0.5	3.2	0.72
35	79	2	11	21	0.2	3.6	3.4	17500	3288	POST_OP	0.5	2.9	0.18
36	79	2	15	10	0.0	3.3	3.3	15700	5204	POST_OP	0.4	2.9	0.18
37	79	2	16	9	0.0	3.4	3.4	14800	5951	POST_OP	0.4	3.0	0.36
38	79	2	16	10	0.0	3.8	3.8	14800	5951	POST_OP	0.4	3.4	1.08
39	79	2	16	11	0.0	3.6	3.6	14800	5951	POST_OP	0.6	3.0	0.36
40	79	2	18	2	0.0	3.8	3.8	15400	6396	POST_OP	0.7	3.1	0.54
41	79	2	18	7	0.0	3.7	3.7	15400	6396	POST_OP	0.5	3.2	0.72
42	79	2	18	8	0.1	3.7	3.6	15400	6396	POST_OP	0.4	3.2	0.72
43	79	2	18	9	0.1	3.7	3.6	15400	6396	POST_OP	0.4	3.2	0.72
44	79	2	18	10	0.1	3.9	3.8	15400	6396	POST_OP	0.4	3.4	1.08
45	79	2	18	11	0.1	4.0	3.9	15400	6396	POST_OP	0.6	3.3	0.90
46	79	2	18	12	0.1	4.1	4.0	15400	6396	POST_OP	0.6	3.4	1.08
47	79	2	18	13	0.1	4.9	4.8	15400	6396	POST_OP	0.6	4.2	2.52
48	79	2	18	14	0.1	4.4	4.3	15400	6396	POST_OP	0.6	3.7	1.62
49	79	2	18	15	0.1	4.1	4.0	15400	6396	POST_OP	0.5	3.5	1.26
50	79	2	18	16	0.1	4.2	4.1	15400	6396	POST_OP	0.5	3.6	1.44
51	79	2	18	17	0.1	4.2	4.1	15400	6396	POST_OP	0.5	3.6	1.44
52	79	2	18	18	0.1	3.8	3.7	15400	6396	POST_OP	0.4	3.3	0.90
53	79	2	18	19	0.3	3.8	3.5	15400	6396	POST_OP	0.5	3.0	0.36
54	79	2	18	20	0.2	3.5	3.3	15400	6396	POST_OP	0.5	2.7	0.72

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TABLE 7(Cont.)

PBAPS IMPACT HOURS ABOVE FEBRUARY CONFIDENCE LIMITS

OBS	YEAR	MONTH	DAY	HOUR	S2	S13I	DI3_2	HW_FLOW	MW_THERM	STATUS	CI13_2	EXI3_2	IMPI3_2
55	79	2	18	21	0.2	3.8	3.6	15400	6396	POST_OP	0.5	3.1	0.54
56	79	2	18	22	0.0	3.7	3.7	15400	6396	POST_OP	0.6	3.1	0.54
57	79	2	18	23	0.0	3.6	3.6	15400	6396	POST_OP	0.7	2.9	0.18
58	79	2	19	2	0.0	3.7	3.7	14200	6510	POST_OP	0.7	3.0	0.36
59	79	2	19	16	0.1	3.4	3.5	14200	6510	POST_OP	0.5	3.0	0.36
60	79	2	19	17	0.1	3.4	3.5	14200	6510	POST_OP	0.5	3.0	0.36
61	79	2	20	8	0.0	3.6	3.6	15000	6543	POST_OP	0.4	3.2	0.72
62	79	2	20	9	0.0	4.0	4.0	15000	6543	POST_OP	0.4	3.6	1.44
63	79	2	20	10	0.0	4.4	4.4	15000	6543	POST_OP	0.4	4.0	2.16
64	79	2	21	3	0.0	3.7	3.7	16200	6564	POST_OP	0.7	3.0	0.36
65	79	2	21	4	0.0	3.8	3.8	16200	6564	POST_OP	0.6	3.2	0.72
66	79	2	21	8	0.0	3.6	3.6	16200	6564	POST_OP	0.4	3.2	0.72
67	79	2	21	9	0.0	3.3	3.3	16200	6564	POST_OP	0.4	2.9	0.18
68	79	2	21	11	0.0	4.4	4.4	16200	6564	POST_OP	0.6	3.8	1.80
69	79	2	21	15	0.0	3.6	3.6	16200	6564	POST_OP	0.5	3.1	0.54
70	79	2	22	8	0.0	3.6	3.6	16300	6572	POST_OP	0.4	3.2	0.72
71	79	2	22	9	0.0	3.8	3.8	16300	6572	POST_OP	0.4	3.4	1.08
72	79	2	22	10	0.0	3.9	3.9	16300	6572	POST_OP	0.4	3.5	1.26
73	79	2	22	11	0.0	4.4	4.4	16300	6572	POST_OP	0.6	3.8	1.80
74	79	2	22	12	0.0	3.8	3.8	16300	6572	POST_OP	0.6	3.2	0.72
75	79	2	22	15	0.0	3.5	3.5	16300	6572	POST_OP	0.5	3.0	0.36
76	79	2	22	16	0.0	3.5	3.5	16300	6572	POST_OP	0.5	3.0	0.36
77	79	2	22	17	0.0	3.4	3.4	16300	6572	POST_OP	0.5	2.9	0.18
78	79	2	23	5	0.0	3.9	3.9	16500	6511	POST_OP	0.4	3.5	1.26
79	79	2	23	24	0.0	3.7	3.7	18500	6511	POST_OP	0.7	3.0	0.36
80	79	2	24	2	0.1	3.7	3.6	34600	6239	POST_OP	0.7	2.9	0.18
81	79	2	24	3	0.1	3.8	3.7	34600	6239	POST_OP	0.7	3.0	0.36
82	79	2	24	10	0.0	3.7	3.7	34600	6239	POST_OP	0.4	3.3	0.90
83	79	2	24	11	0.1	3.7	3.6	34600	6239	POST_OP	0.6	3.0	0.36

Definitions:

S - Thermograph
D - Delta T (C^{o})
HWFLOW - Holtwood Daily River Flow (CFS)
MWTHERM - Daily Thermal Generation of PBAPS (Megawatts)
CL - Confidence Limit (C^{o})
EX - Exceptions (C^{o})
IMP - Impact (F^{o})

TABLE B

PBAPS IMPACT HOURS ABOVE MARCH CONFIDENCE LIMITS

OBS	YEAR	MONTH	DAY	HOUR	S2	S13T	D13_2	HW_FLOW	MW_THERM	STATUS	CL13_2	EX13_2	IMP13_2
1	73	3	6	16	4.7	7.0	2.3	41400	.	PRE_OP	2.2	0.1	0.18
2	73	3	6	17	4.7	7.0	2.3	41400	.	PRE_OP	2.2	0.1	0.18
3	73	3	6	18	4.7	7.0	2.3	41400	.	PRE_OP	2.1	0.2	0.36
4	73	3	6	19	4.8	7.0	2.2	41400	.	PRE_OP	2.0	0.2	0.36
5	73	3	6	20	4.8	7.1	2.3	41400	.	PRE_OP	1.9	0.4	0.72
6	73	3	6	24	5.3	7.2	1.9	41400	.	PRE_OP	1.8	0.1	0.18

There was no thermograph data for March, 1979.

Definitions:

S - Thermograph
D - Delta T (C°)
HWFLOW - Holtwood Daily River Flow (CFS)
MWTHERM - Daily Thermal Generation of PBAPS (Megawatts)
CL - Confidence Limit (C°)
EX - Exceptions (C°)
IMP - Impact (F°)

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TABLE 9

HOLTWOOD DAILY FLOWS(CFS) AND DAILY THERMAL MEGAWATTS- MAR 1979

OBS	YEAR	MONTH	DAY	HW_FLOW	MW_THERM
1	79	3	1	133800	6584
2	79	3	2	114500	6471
3	79	3	3	108700	5261
4	79	3	4	109000	5768
5	79	3	5	133000	6233
6	79	3	6	335700	6579
7	79	3	7	464100	6585
8	79	3	8	405900	6231
9	79	3	9	312700	6366
10	79	3	10	251700	5328
11	79	3	11	209800	6185
12	79	3	12	183600	6564
13	79	3	13	157600	6585
14	79	3	14	128500	6581
15	79	3	15	112300	6586
16	79	3	16	102400	6417
17	79	3	17	95500	3293
18	79	3	18	87200	3291
19	79	3	19	75600	3289
20	79	3	20	67200	3293
21	79	3	21	61300	3290
22	79	3	22	58400	3293
23	79	3	23	56100	3137
24	79	3	24	56500	3288
25	79	3	25	64000	4765
26	79	3	26	90100	5541
27	79	3	27	116100	6297
28	79	3	28	116000	6569
29	79	3	29	103200	6583
30	79	3	30	81900	6580
31	79	3	31	69500	5633

TABLE 10

BOAT SURVEY INFORMATION

SURVEY DATE	3/19/78	3/27/78
TIME:		
Survey Start (EST)	0915	0930
State Line (EST)	1020	1020
Survey Finish (EST)	1145	1145
HYDRAULIC DATA:		
Pond Elevation Start (Ft.)	108.29	108.51
Pond Elevation Finish (Ft.)	108.77	108.39
Natural Flow (24 hour ave., CFS)	73350	110200
Conowingo Inflow (24 hrs. ave., CFS)	73950	109525
Conowingo Dam Draft (24 hr. ave., CFS)	77725	78700
PBAPS Power Output:		
Unit 2: Thermal (MW)	3289	3293
Electrical (MW)	1076	1073
Unit 3: Thermal (MW)	0	3004
Electrical (MW)	0	972
METEOROLOGICAL DATA:		
Time (EST)	0900	0915
Air Temperature (°F)	43	54
Relative Humidity (%)	78	40
Precipitation (24 hour total, in)	None	None
Wind Speed (mph)	0-2	10-15
Cloud Over	Sunny	Partly
Location:	Sta #7	Sta #7
Wind Direction	SSW	NW
WATER TEMPERATURE (THERMOGRAPH)		
Daily Mean: Sta. #2, °C, (°F)	5.3(41.6)	8.4(47.2)
Mid Survey: Sta. #2, °C, (°F)	5.1(41.2)	8.5(47.3)
WATER TEMPERATURE (SURVEY)		
PBAPS Discharge °C, (°F)	12.5(54.5)	16.4(61.5)
Intake °C, (°F)	6.0(42.8)	8.7(47.7)
T °C, (°F)	6.5(11.7)	7.7(13.8)
Pond Surface Max. °C, (°F)	16.8(62.2)	16.7(62.1)
Min. °C, (°F)	4.5(40.1)	8.5(47.3)
Pond Bottom Max. °C, (°F)	9.7(49.5)	16.0(60.8)
Min. °C, (°F)	4.1(39.4)	8.3(46.9)
No. of C.W. Pumps Operating	2	5
No. of Cooling Towers Operating	1	2

TABLE 11(SH 1 of 6)

REPORT NO. CL-22393

SUSQUEHANNA RIVER WATER ANALYSIS

JULY, 1978
Peach Bottom Atomic Power Station
Philadelphia Electric Company

Date August 4, 1978

	Upriver Sample 7/7/78	Plant Intake 7/7/78	Canal Discharge 7/7/78
pH at 25°C	10.3	10.4	10.3
Conductivity, μmho/cm at 25°C	235	275	255
Susperded Solids, mg/l	3	3	0
Phosphate, mg/l as PO_4	0.6	0.6	0.6
Sulfate, mg/l as SO_4	97	56	62
Copper, ppb as Cu	3.5	4.5	10
Zinc, ppb as Zn	37.5	10.0	25.0
Cadmium, ppb as Cd	0.1	3.1	2.1
Iron, ppb as Fe	925	850	875
Cobalt, ppb as Co	9.5	6.5	10.5
Nickel, ppb as Ni	7.0	7.0	8.0
Chromium, ppb as Cr	0.9	0.6	0.8
Manganese, ppb as Mn	200	210	210

Analyzed by: JWS, GCS, LBD

Approved by: G. G. Lutz

P. E. Co. Chemical Laboratory

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TABLE 11 (SH 2 of 6)

REPORT NO. CL-22392

SUSQUEHANNA RIVER WATER ANALYSIS

AUGUST, 1978

Peach Bottom Atomic Power Station
Philadelphia Electric Company

Date October 16, 1978

	Upriver Sample 8/11/78	Plant Intake 8/11/78	Canal Discharge 8/11/78
pH at 25°C	10.0	8.7	7.4
Conductivity, μmho/cm at 25°C	220	215	250
Suspended Solids, mg/l	2	15	0
Phosphate, mg/l as PO_4	0.8	0.8	0.3
Sulfate, mg/l as SO_4	71	104	71
Copper, ppb as Cu	3.6	4.6	9.9
Zinc, ppb as Zn	15	113	35
Cadmium, ppb as Cd	0.1	0.1	0.1
Iron, ppb as Fe	750	375	725
Cobalt, ppb as Co	5.0	4.0	4.5
Nickel, ppb as Ni	6.0	5.5	6.0
Chromium, ppb as Cr	0.2	0.5	1.2
Manganese, ppb as Mn	188	138	173

Analyzed by: JWS, GCS, LBD

Approved by: _____

P. E. Co. Chemical Laboratory

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TABLE 11 (SH 3 of 6)

REPORT NO. CL- 22391

SUSQUEHANNA RIVER WATER ANALYSIS

SEPTEMBER, 1978

Peach Bottom Atomic Power Station
Philadelphia Electric Company

Date October 16, 1978

	Upriver Sample 9/8/78	Plant Intake 9/8/78	Canal Discharge 9/8/78
pH at 25°C	8.5	8.8	9.6
Conductivity, μmho/cm at 25°C	290	255	235
Suspended Solids, mg/l	6	0	0
Phosphate, mg/l as PO_4	1.1	0.6	0.9
Sulfate, mg/l as SO_4	113	97	67
Copper, ppb as Cu	5.8	9.0	14.5
Zinc, ppb as Zn	15	40	60
Cadmium, ppb as Cd	0.2	0.3	0.5
Iron, ppb as Fe	375	725	825
Cobalt, ppb as Co	3.5	4.5	5.0
Nickel, ppb as Ni	4.6	4.6	4.6
Chromium, ppb as Cr	0.5	0.5	0.6
Manganese, ppb as Mn	98	118	145

Analyzed by: JWS, GCS, LBF

Approved by: O. E. Lutz

P. E. Co. Chemical Laboratory

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TABLE 11 (SH 4 of 6)

REPORT NO. CL- 22437

SUSQUEHANNA RIVER WATER ANALYSIS

OCTOBER, 1973

Peach Bottom Atomic Power Station
Philadelphia Electric Company

Date December 5, 1973

	Upriver Sample	Plant Intake	Canal Discharge
pH at 25°C			
Conductivity, μmho/cm at 25°C			
Susperded Solids, mg/l			
Phosphate, mg/l as PO_4			
Sulfate, mg/l as SO_4			
Copper, ppb as Cu	3.0	5.4	21.5
Zinc, ppb as Zn	10	70	13
Cadmium, ppb as Cd	0.52	1.02	0.48
Iron, ppb as Fe	600	500	750
Cobalt, ppb as Co	3.4	2.8	4.0
Nickel, ppb as Ni	10	12.4	8.4
Chromium, ppb as Cr	1.0	1.0	0.5
Manganese, ppb as Mn	125	113	120

Analyzed by: RL

Approved by: B.B. Lutes

P. E. Co. Chemical Laboratory

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TABLE 11 (sh 5 of 6)

SUSQUEHANNA RIVER WATER ANALYSIS

Peach Bottom Atomic Power Station
Philadelphia Electric Company

NOVEMBER, 1978

February 9, 1979

	UPRIVER SAMPLE	PLANT INTAKE	CANAL DISCHARGE
Date Sampled	11/10/78	11/10/78	11/10/78
Copper, ppb as Cu	4.2	4.2	15
Zinc, ppb as Zn	10	27.5	35
Cadmium, ppb as Cd	0.7	1.1	1.2
Iron, ppb as Fe	575	350	1075
Cobalt, ppb as Co	3.6	3.6	5.2
Nickel, ppb as Ni	10	9.0	11.2
Chromium, ppb as Cr	2.2	1.8	2.5
Manganese, ppb as Mn	97.5	75	20.5

ANALYZED BY: R. LOESCH

APPROVED BY: _____
PECO Environmental Section

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TABLE 11(SH 6 of 6)

SUSQUEHANNA RIVER WATER ANALYSIS

Peach Bottom Atomic Power Station
Philadelphia Electric Company

DECEMBER, 1978

February 9, 1979

	UPRIVER SAMPLE	PLANT INTAKE	CANAL DISCHARGE
Date Sampled	12/8/78	12/8/78	12/8/78
Copper, ppb as Cu	4	4	9.4
Zinc, ppb as Zn	200	500	250
Cadmium, ppb as Cd	2.2	3.8	5.0
Iron, ppb as Fe	775	875	675
Cobalt, ppb as Co	4.4	3.6	4.4
Nickel, ppb as Ni	9.0	9.0	10
Chromium, ppb as Cr	2.4	2.2	2.4
Manganese, ppb as Mn	135	143	95

ANALYZED BY: R. LOESCH

APPROVED BY: D. A. Lamond
PECO Environmental Section

2279 202

TABLE 12(SH 1 of 8)

MONTHLY CHLORINE DATA

PEACH BOTTOM ATOMIC POWER STATION

PHILADELPHIA ELECTRIC COMPANY

UNIT #2 CONDENSER

SECTIONS A, B, C
JULY, 1979

Date	Chlorination Rate, #/day			Time, minutes			Free Cl_2 outlet, mg/l		
	A	B	C	A	B	C	A	B	C
1	3300	3300	3300	15	15	15	0	0	0
2	3400	3400	3400	15	15	15	0	0	0
3	3400	3400	3400	15	15	15	0	0	0
4	3500	3400	3400	15	15	15	0	0	0
5	3300	3300	3300	15	15	15	0	0	0
6	3350	3350	3300	15	25	-	0	0	0
7	2600	2500	2500	15	15	15	0	.2	.1
8	2600	2600	2500	15	15	15	.2	.1	.2
9	2800	2800	2800	15	15	15	.1	.1	.1
10	2800	2800	2800	15	15	15	.1	.1	.1
11	2500	2500	2430	15	15	15	.15	.1	.2
12	2200	2200	2250	15	15	15	.2	.1	.1
13	3300	3300	3300	15	15	15	0	0	0
14									
15									
16	5000	5000	5000	15	15	15	<.1	<.1	<.1
17									
18	5500	5500	5500	15	15	15	.1	.1	.1
19									
20									
21									
22									
23									
24									
25	3200	3200	3200	15	15	15	0	.1	.2
26									
27									
28									
29									
30									
31									

Philadelphia Electric Co. Chemical Laboratory

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TABLE 12(SH 2 of 8)

MONTHLY CHLORINE DATA

PEACH BOTTOM ATOMIC POWER STATION

PHILADELPHIA ELECTRIC COMPANY

UNIT #3 CONDENSER

SECTIONS A, B, C

JULY, 1978

Date	Chlorination Rate, #/day			Time, minutes			Free Cl_2 outlet, mg/l		
	A	B	C	A	B	C	A	B	C
1	3300	3300	3300	15	15	15	0	0	0
2	3400	3400	3400	15	15	15	0	0	0
3	3400	3400	3400	15	15	15	0	0	0
4	3400	3400	3400	15	15	15	0	0	0
5	3200	3200	3200	15	15	15	0	0	0
6	3200	3200	3200	15	15	15	0	.1	0
7	2500	2500	2500	15	15	15	.1	.2	.2
8	2500	2500	2500	15	15	15	.2	.2	.2
9	2800	2800	2800	15	15	15	.1	.2	.1
10	2800	2800	2800	15	15	15	.2	.2	.1
11	2300	2300	2300	15	15	15	.2	.1	.1
12	2200	2250	2200	15	15	15	.2	.1	.2
13									
14	6000	6000	6000	15	15	15	<.1	<.1	<.1
15									
16									
17									
18									
19	4500	4500	4500	15	15	15	<.1	<.1	.1
20									
21									
22									
23									
24									
25									
26	3000	3000	3000	15	15	15	.15	.2	.2
27									
28									
29									
30									
31									

Philadelphia Electric Co. Chemical Laboratory

TABLE 12(SH 3 of 9)

MONTHLY CHLORINE DATA

PEACH BOTTOM ATOMIC POWER STATION

PHILADELPHIA ELECTRIC COMPANY

UNIT #2 CONDENSER

SECTIONS A, B, C

AUGUST, 1978

Date	Chlorination Rate, #/day			Time, minutes			Free Cl_2 outlet, mg/l		
	A	B	C	A	B	C	A	B	C
1	3600	[illegible]	3600	15	15	15	.10	.10	.10
2									
3									
4									
5									
6									
7									
8	3600	3600	3600	-	-	-	.15	.15	.20
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22	4300	4500	4500	15	15	15	.10	.10	.10
23									
24									
25									
26									
27									
28									
29									
30									
31									

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TABLE 12(SH 4 of 8)

MONTHLY CHLORINE DATA

PEACH BOTTOM ATOMIC POWER STATION

PHILADELPHIA ELECTRIC COMPANY

UNIT #3 CONDENSER

SECTIONS A, B, C

AUGUST, 1978

Date	Chlorination Rate, #/day			Time, minutes			Free Cl_2 outlet, mg/l		
	A	B	C	A	B	C	A	B	C
1									
2	3600	3600	3600	15	15	15	.15	.10	.15
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23	4300	4400	4400	16	17	15	.30	.30	.30
24									
25									
26									
27									
28									
29									
30									
31									

Philadelphia Electric Co. Chemical Laboratory

TABLE 12(SH 5 of 8)

MONTHLY CHLORINE DATA

PEACH BOTTOM ATOMIC POWER STATION

PHILADELPHIA ELECTRIC COMPANY

UNIT #2 CONDENSER

SECTIONS A, B, C

SEPTEMBER, 1978

Date	Chlorination Rate, #/day			Time, minutes			Free Cl_2 outlet, mg/l		
	A	B	C	A	B	C	A	B	C
1									
2									
3									
4									
5	2000	2000	2000	15	15	15	0	0	.25
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									

Philadelphia Electric Co. Chemical Laboratory

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TABLE 12(SH 6 of 8)

MONTHLY CHLORINE DATA

PEACH BOTTOM ATOMIC POWER STATION

PHILADELPHIA ELECTRIC COMPANY

UNIT #3 CONDENSER

SECTIONS A, B, C

SEPTEMBER, 1978

Date	Chlorination Rate, #/day			Time, minutes			Free Cl_2 outlet, mg/l		
	A	B	C	A	B	C	A	B	C
1									
2									
3									
4									
5									
6	2000	2000	2000	15	15	15	0	0	.5
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									

Philadelphia Electric Co. Chemical Laboratory

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TABLE 12(SH 7 of 8)

DECEMBER, 1978

MONTHLY CHLORINE DATA

PEACH BOTTOM ATOMIC POWER STATION

PHILADELPHIA ELECTRIC COMPANY

UNIT #2 CONDENSER

SECTIONS A, B, C

	CHLORINATION RATE, #/day			TIME, MINUTES			FREE Cl_2 OUTLET, MG/l		
	A	B	C	A	B	C	A	B	C
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18	3400	3400	3400	15	15	15	0	.05	0
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									

PECO Environmental Section

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TABLE 12(SH 8 of 9)

DECEMBER, 1978

MONTHLY CHLORINE DATA

PEACH BOTTOM ATOMIC POWER STATION

PHILADELPHIA ELECTRIC COMPANY

UNIT #3 CONDENSER

SECTIONS A, B, C

	CHLORINATION RATE, #/day			TIME, MINUTES			FREE Cl_2 OUTLET, MG/ l		
	A	B	C	A	B	C	A	B	C
1	3500	3500	3500	15	15	15	.05	.05	.05
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									

PECO Environmental Section

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TABLE 13(SH 1 of 3)

MONTHLY CHLORINE SURVEY

PEACH BOTTOM ATOMIC POWER STATION
PHILADELPHIA ELECTRIC COMPANY

JULY, 1978

The following data lists results of the monthly survey of chlorine residual determinations made on samples taken at the canal discharge to the river during chlorination in the plant on July 13, 1978.

Chlorination Data

Time	Condenser Section	Rate #/Day	Free Chlorine Residual, mg/l Start	Middle	End
13:30	2A	3300	0	0	0

Canal Discharge Data

Time	Total Chlorine Residual, mg/l
14:00	<.05
14:15	<.05
14:30	<.05
14:45	<.05

Philadelphia Electric Co. Chemical Laboratory

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MONTHLY CHLORINE SURVEY

PEACH BOTTOM ATOMIC POWER STATION
PHILADELPHIA ELECTRIC COMPANY

AUGUST, 1978

The following data lists results of the monthly survey of chlorine residual determinations made on samples taken at the canal discharge to the river during chlorination in the plant on

Chlorination Data

Time	Condenser Section	Rate #/Day	Free Chlorine Residual, mg/l Start	Middle	End
10:45 a.m.	3A	4400	<0.1	<0.1	<0.1

Canal Discharge Data

Time	Total Chlorine Residual, mg/l
10:52 a.m.	<0.1
11:00 a.m.	<0.1
11:15 a.m.	<0.1
11:30 a.m.	<0.1
11:45 a.m.	<0.1
12:00 noon	<0.1

Philadelphia Electric Co. Chemical Laboratory

TABLE 13(SH 3 of 3)

MONTHLY CHLORINE SURVEY

PEACH BOTTOM ATOMIC POWER STATION

PHILADELPHIA ELECTRIC COMPANY

DECEMBER, 1978

The following data lists results of the monthly survey of chlorine residual determinations made on samples taken at the canal discharge to the river during chlorination in the plant on December 18, 1978.

CHLORINATION DATA

TIME	CONDENSER SECTION	RATE #/DAY	FREE CHLORINE RESIDUAL, mg/l START	MIDDLE	END
2:05 PM	2A	3400	0	0	0

CANAL DISCHARGE DATA

TIME	TOTAL CHLORINE RESIDUAL, mg/l
2:05 PM	.1
2:30 PM	.1
2:55 PM	.1

PECO Environmental

DWM/ktv

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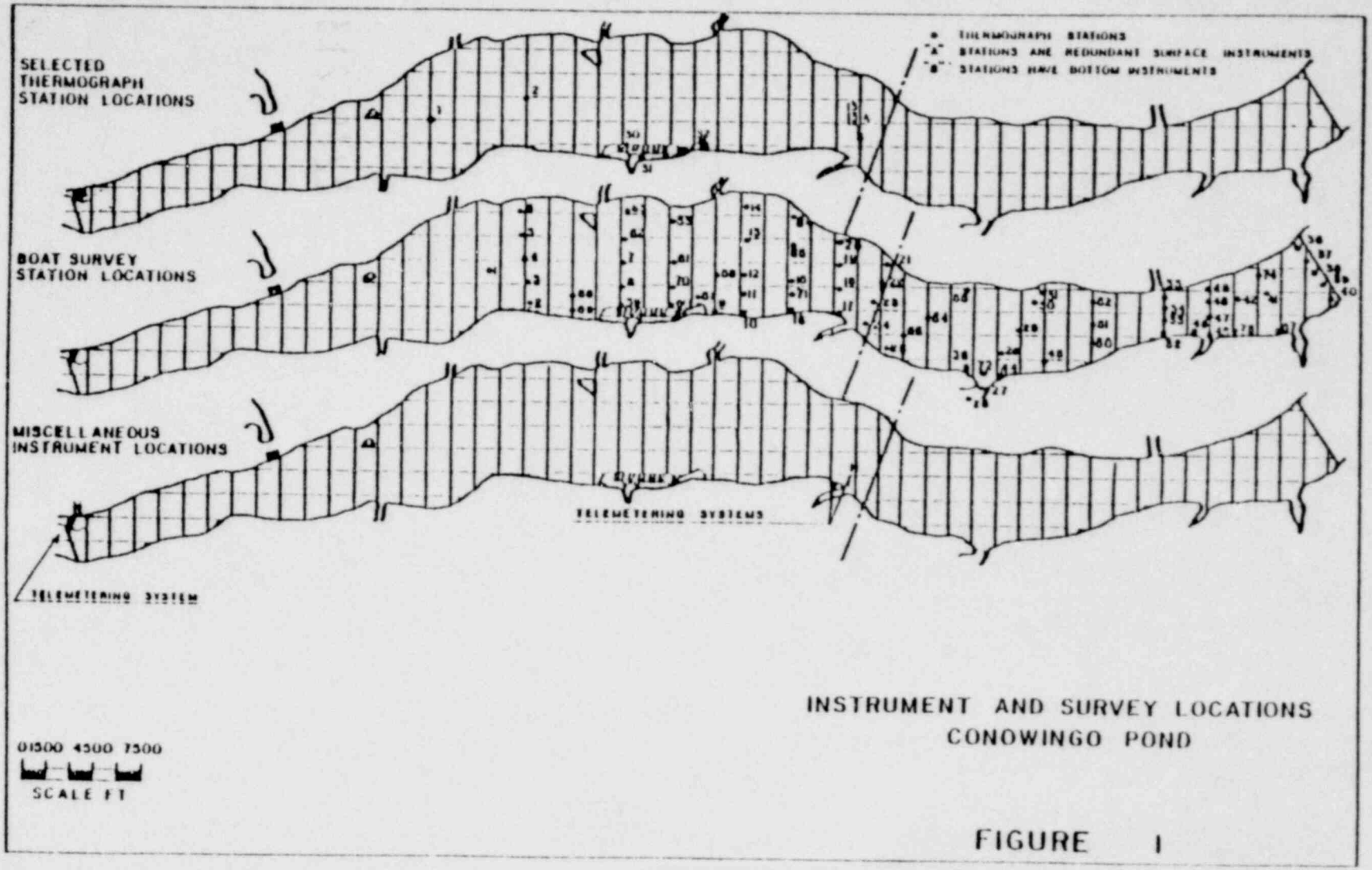

INSTRUMENT AND SURVEY LOCATIONS
CONOWINGO POND

FIGURE 1

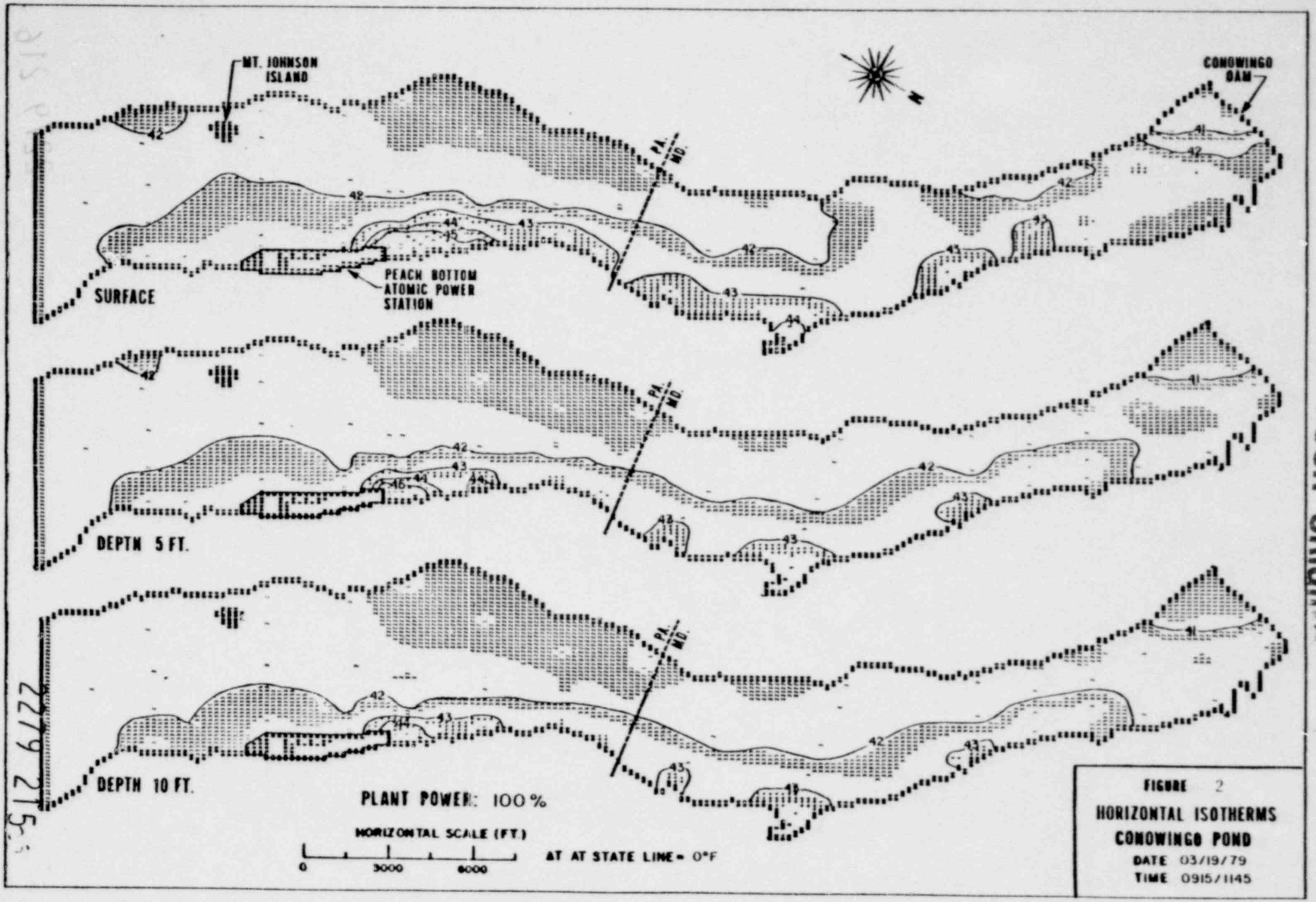

FIGURE 2
HORIZONTAL ISOTHERMS
CONOWINGO POND
DATE 03/19/79
TIME 0915/1145

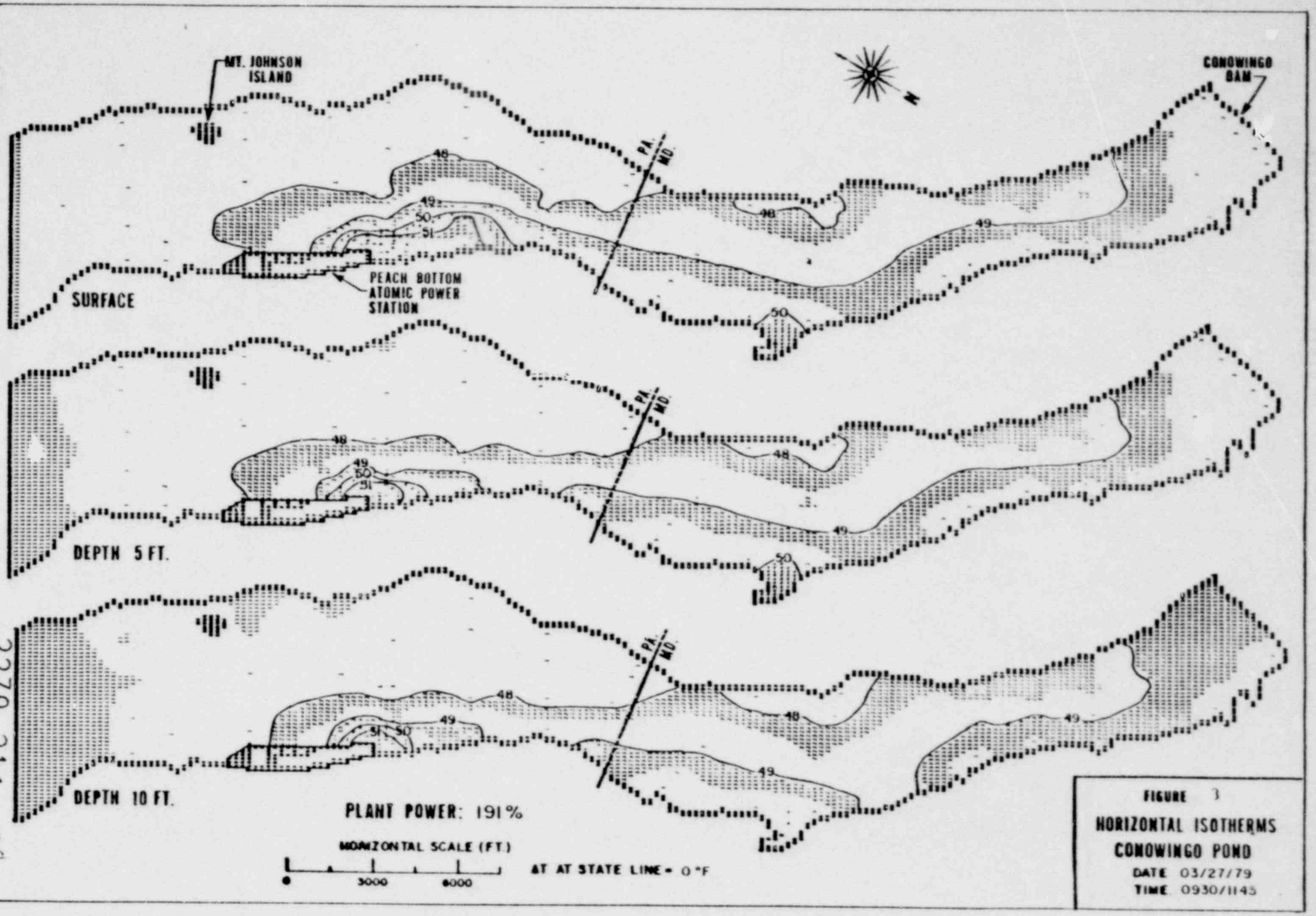

FIGURE 3

HORIZONTAL ISOTHERMS
CONOWINGO POND

DATE 03/27/79
TIME 0930/1145