PEACH BOTTOM ATOMIC POWER STATION

MONTHLY REPORT NO. 79

for

JANUARY 1980

THERMAL AND BIOLOGICAL

MONITORING PROGRAMS

FOR

UNITS NO. 2 AND 3

PHILADELPHIA ELECTRIC COMPANY

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PEACH BOTTOM ATOMIC POWER STATION
UNITS NO. 2 & 3

The monthly mean delta T temperature (650 hourly readings) for the state line minus S2 location was 2.52°F higher than the mean of the preoperational experience. The 5°F delta T above ambient criteria at the state line was exceeded 9 out of 650 observations in the post-op with the plant operating. Also in January 18 observations out of 650 exceeded the ambient criteria with no 5° delta T credit since the plant was not operating.

The daily river flows as measured at Holtwood Hydro-electric Station and the daily generation at PBAPS in thermal megawatts for the reporting period are presented in Table 1. Table 2 summarizes the hourly Conowingo Pond temperatures and Table 3 shows the impact hours above January confidence limits. Figure 1 shows the instrument and survey locations.

Figures 2, 3, and 4 are isotherm plots, which include three (3) horizontal sections of boat surveys made during the January recording period. Boat survey information is tabulated in Table 4. 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.

HOLTWOOD DAILY FLOWS(CFS) AND DAILY THERMAL MEGAWATTS- JAN 1980

OBS	YEAR	MONTH	DAY	MW_FLOW	MW_THERM
1	80	1	1	49400	3287
2	80	1	2	43900	3291
3	80	1	3	39800	3290
4	80	1	4	37200	3192
5	80	1	5	32600	3284
6	80	1	6	27300	3286
7	80	1	7	28200	3284
8	80	1	8	25000	3288
9	80	1	9	23400	3571
10	80	1	10	20500	3699
11	80	1	11	20600	2989
12	80	1	12	20800	7
13	80	1	13	20200	.
14	80	1	14	22200	.
15	80	1	15	22300	.
16	80	1	16	27000	.
17	80	1	17	31700	.
18	80	1	18	33100	1566
19	80	1	19	33800	2687
20	80	1	20	32700	5323
21	80	1	21	29500	6213
22	80	1	22	26600	5146
23	80	1	23	25200	5971
24	80	1	24	23100	6491
25	80	1	25	21200	6445
26	80	1	26	20600	5421
27	80	1	27	18400	6074
28	80	1	28	16100	6523
29	80	1	29	17400	5060
30	80	1	30	14200	3201
31	80	1	31	13000	3182

TABLE 1

SUMMARY OF HOURLY CONOWINGO POND WATER TEMPERATURES JAN,1980

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
HW_FLOW	744	26354.84	8405.88	13000.00	49400.00
MW_THERM	624	4068.12	1620.00	7.00	6523.00
S2	669	1.61	0.91	0.30	4.10
S2S	669	1.61	0.91	0.30	4.10
S13	725	2.86	1.07	0.80	6.00
S13A	725	2.92	1.18	0.90	6.40
S13S	725	2.86	1.07	0.80	6.00
S30	743	1.96	0.93	0.30	4.30
S31	706	10.38	5.59	0.20	19.00
S32	742	10.00	4.90	0.90	17.00
D13_2	650	1.29	1.03	-0.50	4.10
D2_2A	669	-1.84	5.32	-18.60	1.50
D13_13A	725	-0.06	0.40	-2.50	1.40
D31_30	706	8.52	5.12	-1.10	15.80
D32_30	742	8.04	4.39	-0.60	13.60
D31_32	706	0.58	1.01	-1.70	3.50
DS13SS2S	650	1.29	1.03	-0.50	4.10

Definitions are as follows:

N - Number of observations during the month
S - Thermograph Station (e.g., S2 is thermograph Station 2)

(TEMPERATURES ARE IN DEGREES CENTIGRADE)

D - Difference in temperature of the two stations (e.g. D13-2 is the temperature at Station 13 minus the temperature at Station 2, in degrees Centigrade)
HW FLOW - Holtwood Flow in CFS
MW THERM- Total Thermal Output of PBAPS in Megawatts
S13S - Thermograph S13A is substituted when S13 is missing or spurious readings are observed
S2S - Thermograph S2A is substituted when S2 is missing or spurious readings are observed.

TABLE 2

PBAPS IMPACT HOURS ABOVE JANUARY CONFIDENCE LIMITS

OBS	YEAR	MONTH	DAY	HOUR	S2T	S13T	D13_2	HW_FLOW	MW_THERM	STATUS	CL13_2	EX13_2	IMP13_2
1	80	1	13	1	0.8	1.9	1.1	20200	.	POST_OP	0.6	0.5	0.90
2	80	1	13	2	0.8	1.9	1.1	20200	.	POST_OP	0.6	0.5	0.90
3	80	1	13	4	0.8	1.9	1.1	20200	.	POST_OP	0.5	0.6	1.08
4	80	1	13	5	0.7	2.0	1.3	20200	.	POST_OP	0.5	0.8	1.44
5	80	1	13	6	0.7	2.0	1.3	20200	.	POST_OP	0.6	0.7	1.26
6	80	1	13	7	0.7	2.0	1.3	20200	.	POST_OP	0.7	0.6	1.08
7	80	1	13	8	0.7	2.0	1.3	20200	.	POST_OP	0.7	0.6	1.08
8	80	1	13	9	0.7	1.8	1.1	20200	.	POST_OP	0.7	0.4	0.72
9	80	1	13	10	0.7	1.7	1.0	20200	.	POST_OP	0.7	0.3	0.54
10	80	1	13	11	0.7	1.6	0.9	20200	.	POST_OP	0.7	0.2	0.36
11	80	1	13	12	0.6	1.7	1.1	20200	.	POST_OP	0.7	0.4	0.72
12	80	1	13	13	0.6	1.8	1.2	20200	.	POST_OP	0.7	0.5	0.90
13	80	1	13	14	0.6	1.6	1.0	20200	.	POST_OP	0.7	0.3	0.54
14	80	1	13	15	0.6	1.4	0.8	20200	.	POST_OP	0.6	0.2	0.36
15	80	1	13	16	0.6	1.7	1.1	20200	.	POST_OP	0.7	0.4	0.72
16	80	1	13	17	0.6	1.7	1.1	20200	.	POST_OP	0.7	0.4	0.72
17	80	1	13	18	0.7	1.7	1.0	20200	.	POST_OP	0.8	0.2	0.36
18	80	1	14	4	0.8	1.4	0.6	22200	.	POST_OP	0.5	0.1	0.18
19	80	1	27	20	1.4	4.9	3.5	18400	6074	POST_OP	0.6	2.9	0.18
20	80	1	27	21	1.4	4.9	3.5	18400	6074	POST_OP	0.6	2.9	0.18
21	80	1	28	10	1.4	5.3	3.9	16100	6523	POST_OP	0.7	3.2	0.72
22	80	1	28	20	1.2	4.8	3.6	16100	6523	POST_OP	0.6	3.0	0.36
23	80	1	29	24	0.4	4.1	3.7	17400	5060	POST_OP	0.6	3.1	0.54
24	80	1	30	1	0.4	3.9	3.5	14200	3201	POST_OP	0.6	2.9	0.18
25	80	1	30	2	0.4	4.5	4.1	14200	3201	POST_OP	0.6	3.5	1.26
26	80	1	30	4	0.4	4.5	4.1	14200	3201	POST_OP	0.5	3.6	1.44
27	80	1	30	5	0.4	3.9	3.5	14200	3201	POST_OP	0.5	3.0	0.36

Definitions:

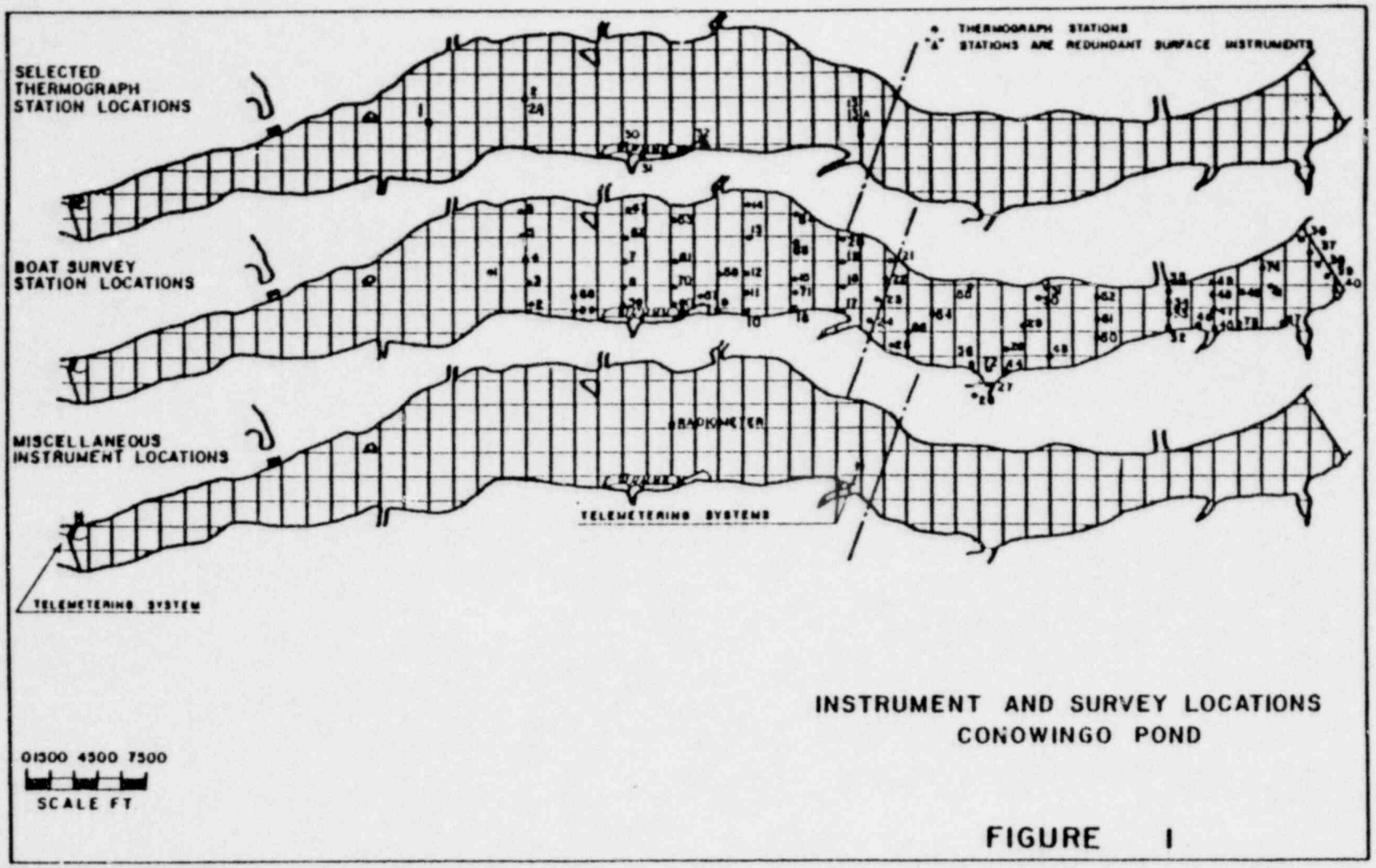
S - Thermograph
D - Delta T (C°)
Hw Flow - Holtwood Daily River Flow (cfs)
MW Therm - Daily Thermal Generation of PBAPS (megawatts)
CL - Confidence Limit (C°)
EX - Exceptions (C°)
IMP - Impact (F°)

TABLE 3

TABLE 4

BOAT SURVEY INFORMATION

SURVEY DATE	1/8/80	1/23/80	1/30/80
TIME:			
Survey Start (EST)	0815	0900	0830
State Line (EST)	0922	1004	0940
State Finish (EST)	1030	1115	1115
HYDRAULIC DATA:			
Pond Elevation Start (Ft.)	108.20	108.11	107.91
Pond Elevation Finish (Ft.)	107.76	107.78	107.81
Natural Flow (24 hour ave., CFS)	24,300	24,000	12,500
Conowingo Inflow (24 hrs. ave., CFS)	26,000	24,100	12,650
Conowingo Dam Draft (24 hr. ave., CFS)	28,375	27,400	17,300
PBAPS Power Output:			
Unit 2: Thermal (MW)	0	2679	3201
Electrical (MW)	-12.3	833	1020
Unit 3: Thermal (MW)	3288	3292	0
Electrical (MW)	1074	1080	-12.7
METEOROLOGICAL DATA:			
Time (EST)	0810	0850	0825
Air Temperature (°F)	30	39	24
Relative Humidity (%)	50	80	60
Precipitation (24 hour total, in)	0	0	0
Wind Speed (mph)	5	2	32
Cloud Over	Partial	Full	Partial
Location:	7	7	7
Wind Direction	NW	NW	NW
WATER TEMPERATURE (THERMOGRAPH)			
Daily Mean: Sta. #2 °C, (°F)	1.3(34.3)	2.5(36.5)	.5(32.9)
Mid Survey: Sta. #2, °C, (°F)	1.7(35.1)	2.6(36.7)	.5(32.9)
WATER TEMPERATURE (SURVEY)			
PBAPS Discharge °C, (°F)	8.4(47.1)	11.9(53.4)	6.9(44.4)
Intake °C, (°F)	.8(33.4)	25(36.5)	0(32.0)
Delta T °C, (°F)	7.6(13.7)	9.4(16.9)	6.9(12.4)
Pond Surface Max. °C, (°F)	8.3(46.9)	12.7(54.9)	7.0(44.6)
Min. °C, (°F)	.7(33.3)	2.0(35.6)	-.1(30.0)
Pond Bottom Max. °C, (°F)	8.6(47.5)	13.3(55.9)	7.7(45.9)
Min. °C, (°F)	.6(33.1)	2.0(35.6)	-.1(30.0)
No. of C.W. Pumps Operating	3	4	3
No. of Cooling Towers Operating	2	2	2



INSTRUMENT AND SURVEY LOCATIONS
CONOWINGO POND

FIGURE 1

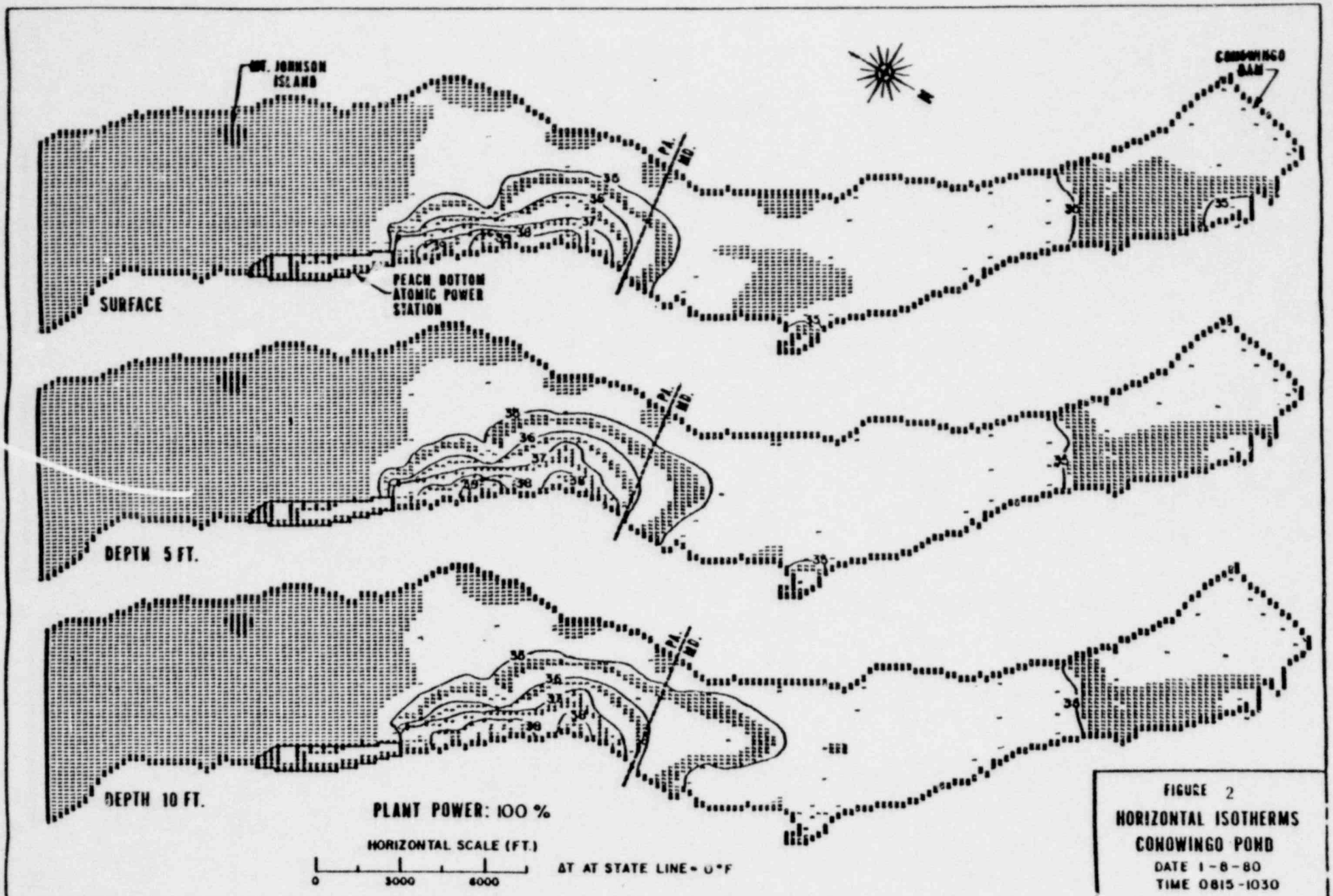


FIGURE 2
HORIZONTAL ISOTHERMS
CONOWINGO POND
DATE 1-8-80
TIME 0815-1030

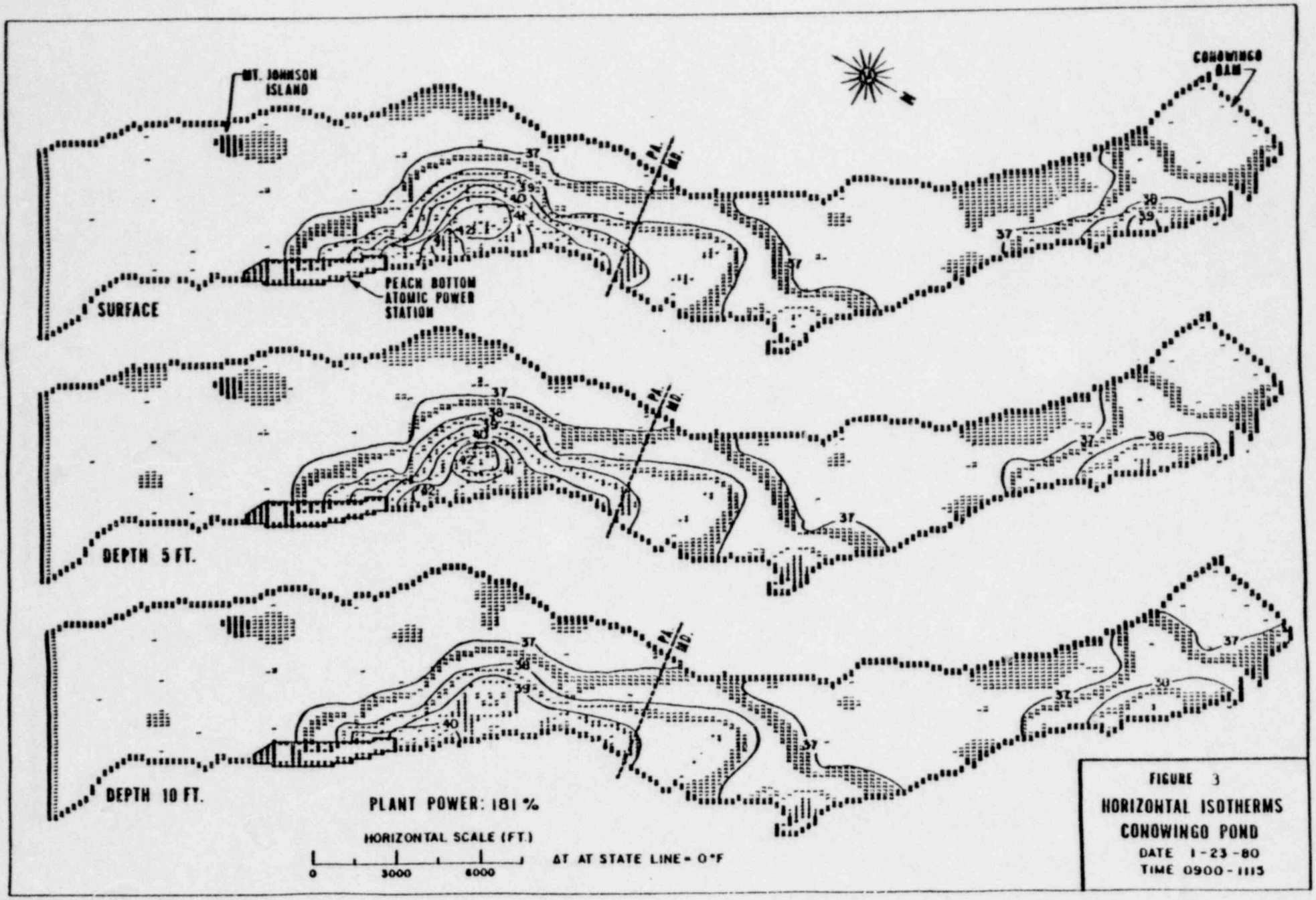


FIGURE 3
HORIZONTAL ISOTHERMS
CONOWINGO POND
DATE 1-23-80
TIME 0900-1115

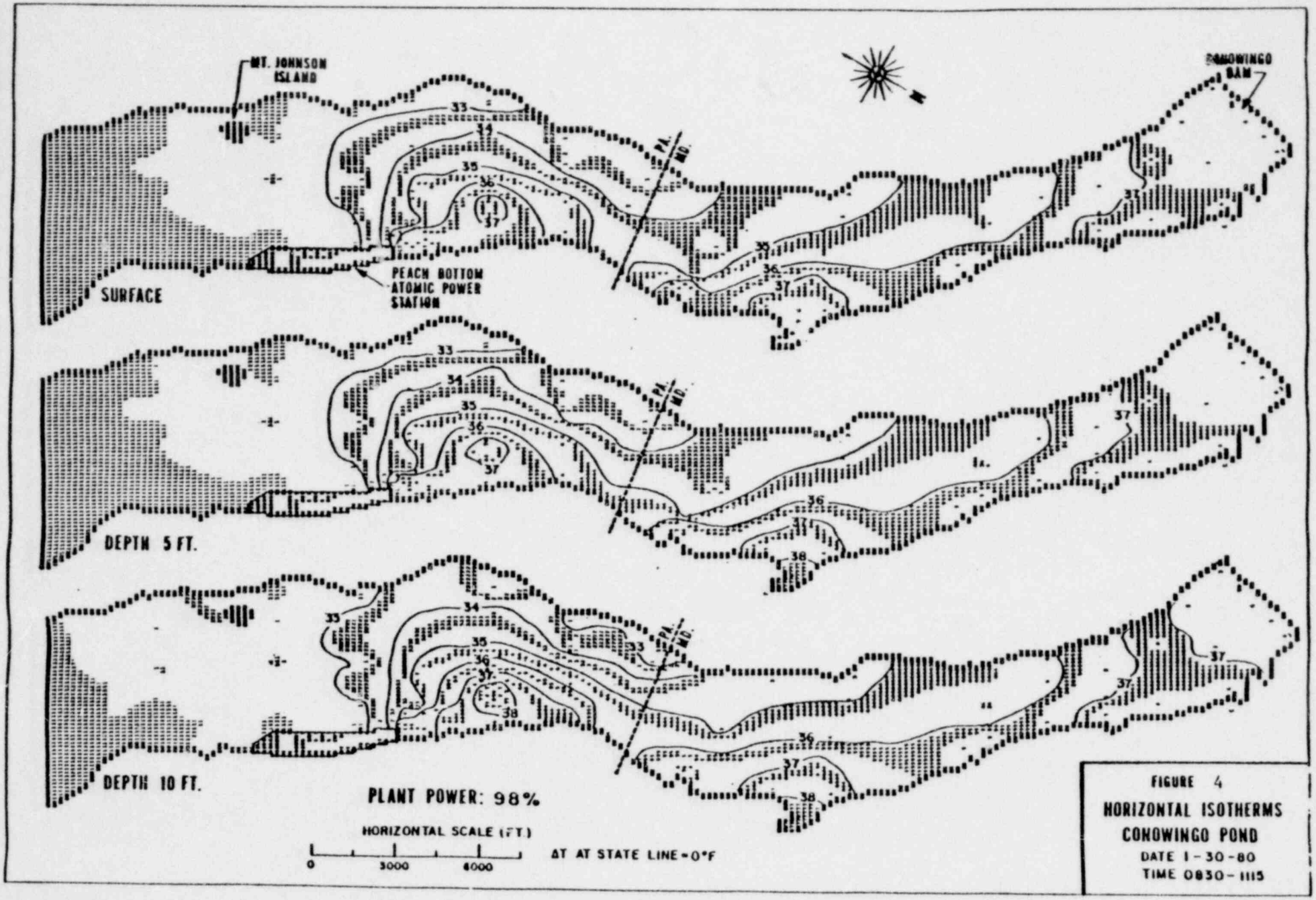


FIGURE 4
HORIZONTAL ISOTHERMS
CONOWINGO POND
DATE 1-30-80
TIME 0830-1115