PEACH BOTTOM ATOMIC POWER STATION

MONTHLY REPORT NO. 71

for

MAY 1979

THERMAL AND BIOLOGICAL

MONITORING PROGRAMS

FOR

UNITS NO. 2 AND 3

PHILADELPHIA ELECTRIC COMPANY

446 339

MONTHLY REPORT NO. 71 FOR MAY, 1979
THERMAL AND BIOLOGICAL MONITORING PROGRAMS
PEACH BOTTOM ATOMIC POWER STATION
UNITS NO. 2 & 3

The operation of PBAPS during the month of May, 1979 was well within all applicable thermal criteria. The monthly mean delta T temperature (714 hourly readings) for the state line minus S2 location was .18°F higher than the mean of the preoperational experience. The 5°F delta T above ambient criteria at the state line was not exceeded on an hourly basis due to plant operation.

The daily river flows as measured at Holtwood Hydroelectric 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 May confidence limits. Figure 1 shows the instrument and survey locations.

Figures 2, 3, 4, and 5 are isotherm plots, which include three (3) horizontal sections of boat surveys made during the May 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 cause 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 1

Holtwood Daily Flow (CFS) and Daily, Thermal Megawatts - May, 1979

OBS	YEAR	MONTH	DAY	MW_FLOW	MW_THERM
1	79	5	1	44100	6277
2	79	5	2	43800	6273
3	79	5	3	40000	6279
4	79	5	4	37100	6256
5	79	5	5	36300	6284
6	79	5	6	37000	6278
7	79	5	7	34200	6 8
8	79	5	8	34600	6282
9	79	5	9	33000	6278
10	79	5	10	30400	6288
11	79	5	11	28800	6278
12	79	5	12	27700	6269
13	79	5	13	30000	5321
14	79	5	14	32700	2984
15	79	5	15	30200	2975
16	79	5	16	28600	2994
17	79	5	17	26000	2989
18	79	5	18	24300	2933
19	79	5	19	22100	1811
20	79	5	20	21000	2954
21	79	5	21	21000	2974
22	79	5	22	19600	2983
23	79	5	23	20500	2979
24	79	5	24	30900	4543
25	79	5	25	49100	5623
26	79	5	26	90200	5301
27	79	5	27	101500	5833
28	79	5	28	101200	6228
29	79	5	29	99000	6241
30	79	5	30	91900	6251
31	79	5	31	79600	6259

TABLE 2

SUMMARY OF HOURLY CONOWINGO POND WATER TEMPERATURES MAY,1979

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
HW_FLOW	744	43432.26	25917.09	19600.00	101500.00
MW_THERM	744	5012.74	1554.15	1811.00	6788.00
S2	739	19.01	2.47	14.40	23.10
S13	718	19.45	2.18	15.10	23.10
S13A	9	17.16	0.19	16.90	17.40
S30	742	19.10	2.31	15.00	23.00
S31	743	27.98	2.11	23.10	32.60
S32	743	25.63	1.85	21.40	30.20
D13_2	714	0.36	0.62	-1.00	2.20
D13_13A	9	0.17	0.17	0.00	0.40
D31_30	742	8.87	1.76	2.10	10.80
D32_30	742	6.53	2.09	0.30	10.30
D31_32	743	2.34	1.07	-0.40	6.00
S13S	718	19.45	2.18	15.10	23.10
DS13S_S2	714	0.36	0.62	-1.00	2.20

TABLE 3

There were no hourly exceptions in Apr 1

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PBAPS IMPACT HOURS ABOVE MAY CONFIDENCE LIMITS

OBS	YEAR	MONTH	DAY	HOUR	S1	CL1	D1S_2	HW_FLOW	MW_THERM	STATUS	CL1S_2	EX1S_2	IMP1S_2
1	72	5	7	3	12.8	14.1	1.3	43500	.	PRE_OP	1.2	0.1	0.16
2	73	5	7	4	12.7	14.0	1.3	43500	.	PRE_OP	1.2	0.1	0.16
3	73	5	7	5	12.7	14.0	1.3	43500	.	PRE_OP	1.2	0.1	0.16
4	73	5	7	6	12.7	14.0	1.3	43500	.	PRE_OP	1.2	0.1	0.16
5	73	5	10	15	15.7	17.5	1.8	40600	.	PRE_OP	1.6	0.2	0.36
6	73	5	10	16	15.6	17.5	1.9	40600	.	PRE_OP	1.5	0.4	0.72
7	73	5	10	17	15.5	17.3	1.8	40600	.	PRE_OP	1.5	0.3	0.54

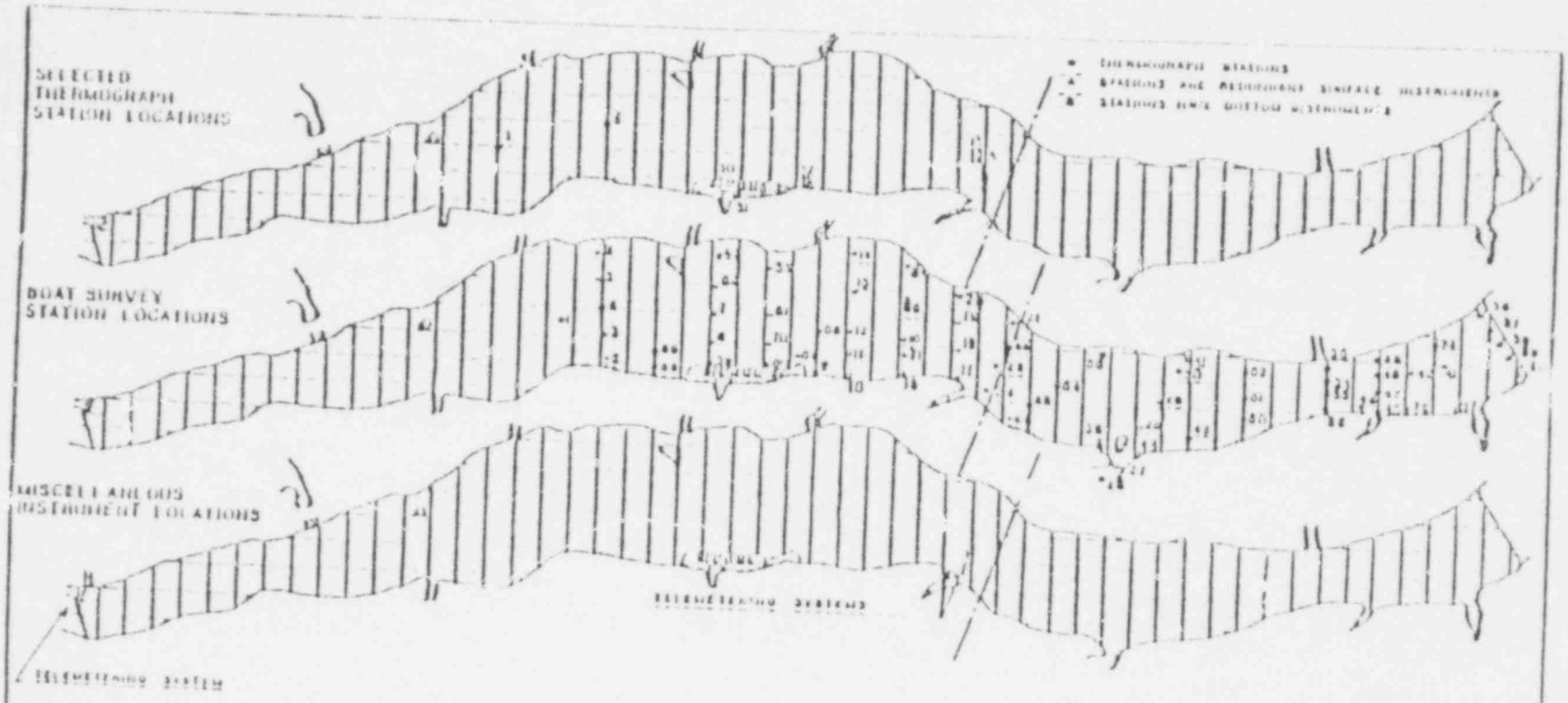
DEFINITIONS:

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

TABLE 4

BOAT SURVEY INFORMATION

SURVEY DATE	5/3/79	5/9/79	5/17/79	5/22/79
TIME:				
Survey Start (EST)	0850	0830	0735	0810
State Line (EST)	1040	0850	0740	0915
Survey Finish (EST)	1300	1030	1030	1020
HYDRAULIC DATA:				
Pond Elevation Start (Ft.)	108.5	108.61	108	107.99
Pond Elevation Finish (Ft.)	107.9	108.18	108.20	107.91
Natural Flow (24 hour ave., CFS)	38,300	39,000	24,100	18,100
Conowingo Inflow (24 hrs. ave., CFS)	38,050	35,000	25,925	19,525
Conowingo Dam Draft (24 hr. ave., CFS)	39,125	33,675	,150	22,750
PBAPS Power Output:				
Unit 2: Thermal (MW)	3283	3292	0	0
Electrical (MW)	1067	1074	-10	-12
Unit 3: Thermal (MW)	2996	2986	2989	2983
Electrical (MW)	953	957	944	942
METEOROLOGICAL DATA:				
Time (EST)	0815	0815	0715	0750
Air Temperature (°F)	60	68	52	60
Relative Humidity	65	70	67	80
Precipitation (24 hour total, in)	None	None	None	None
Wind Speed (mph)	11	9	17	0
Cloud Over	Partly Sunny	Partly Sunny	Clear	Full
Location:	Sta. #7	Sta. #7	Sta. #7	Sta. #7
Wind Direction	S	SE	NE	N
WATER TEMPERATURE (THERMOGRAPH)				
Daily Mean: Sta. #2, °C, (°F)	16.5(61.7)	17.6(63.7)	21.2(70.2)	20.7(69.3)
Mid Survey: Sta. #2, °C, (°F)	16.2(61.2)	17.2(63.0)	20.6(69.1)	20.6(69.1)
WATER TEMPERATURE (SURVEY)				
PBAPS Discharge °C, (°F)	23.6(74.5)	22.3(72.1)	25.3(77.5)	24.5(76.1
Intake °C, (F)	16.5(61.7)	17.9(64.2)	20.8(69.4)	20.3(68.5
T °C, (°F)	7.1(12.8)	4.4(7.9)	4.5(8.1)	4.2(7.6)
Pond Surface Max. °C, (°F)	23.8(74.8)	21.3(70.3)	25.2(77.4)	24.6(76.3
Min. °C, (°F)	16.4(61.5)	17.4(63.3)	20.6(69.1)	20.2(68.4
Pond Bottom Max. °C, (°F)	23.4(74.1)	35.5(77.9)	25.4(77.7)	24.4(75.9
Min. °C, (°F)	16.3(61.3)	17.1(62.8)	20.4(68.7)	20.1(68.2
No. of C.W. Pumps Operating	6	6	3	3
No. of Cooling Towers Operating	3	1	2	2



INSTRUMENT AND SURVEY LOCATIONS
CONOWINGO POND

FIGURE 1

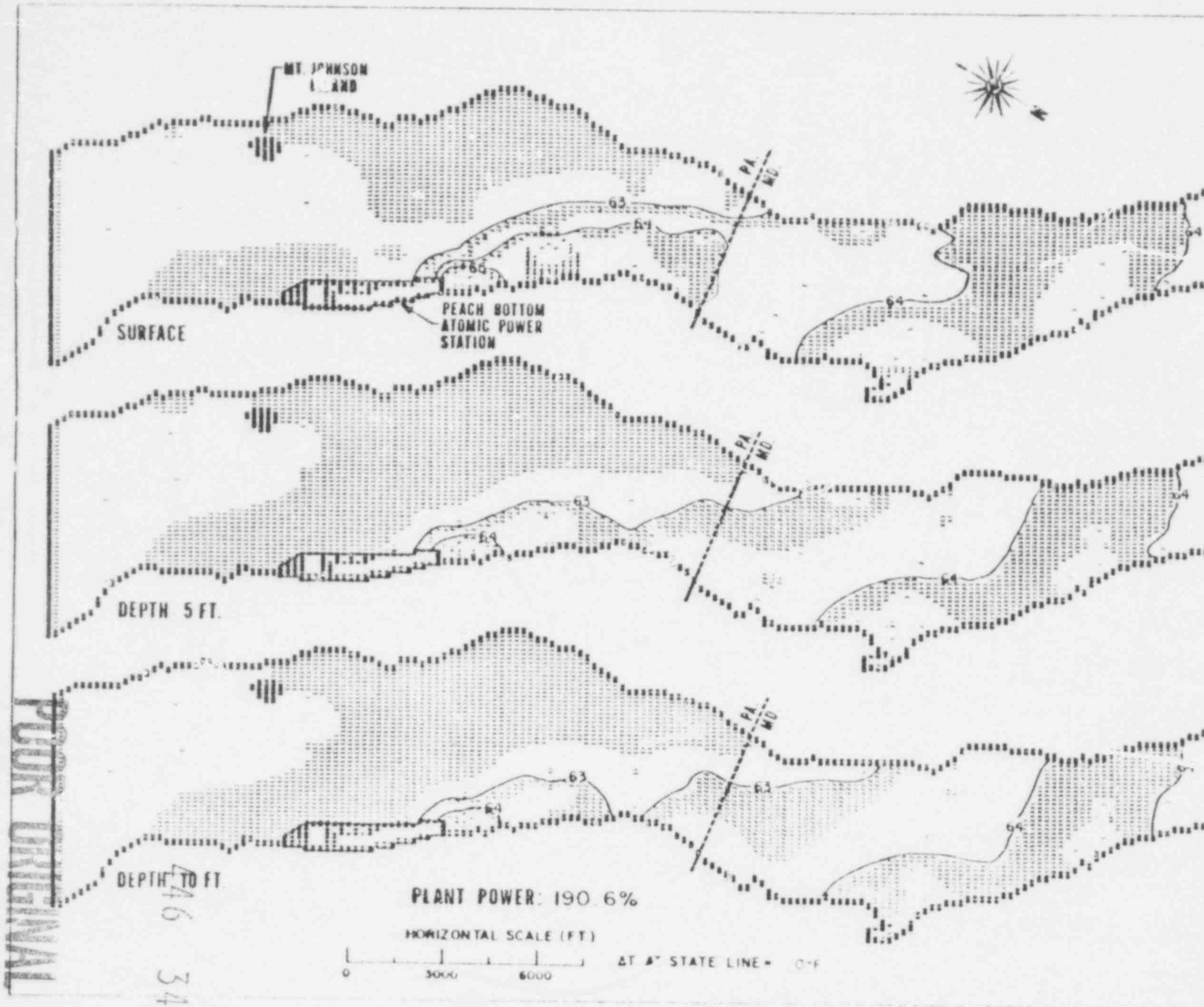


FIGURE 2
HORIZONTAL ISOTHERMS
CONOWINGO POND
DATE 05/03/79
TIME 0830/1300

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POOR ORIGINAL

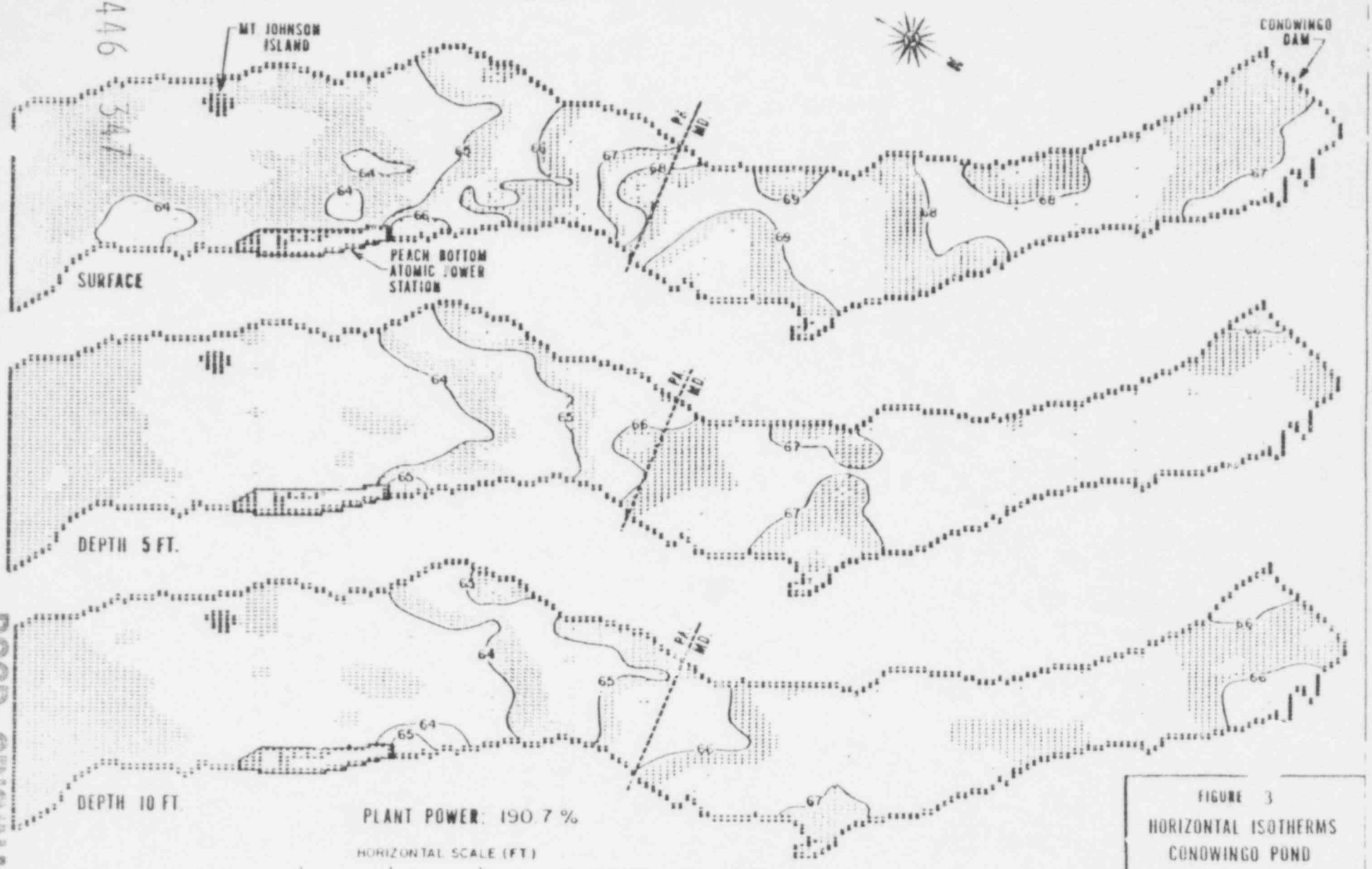

FIGURE 3
HORIZONTAL ISOTHERMS
CONOWINGO POND
DATE 05/09/79
TIME 0830/1030

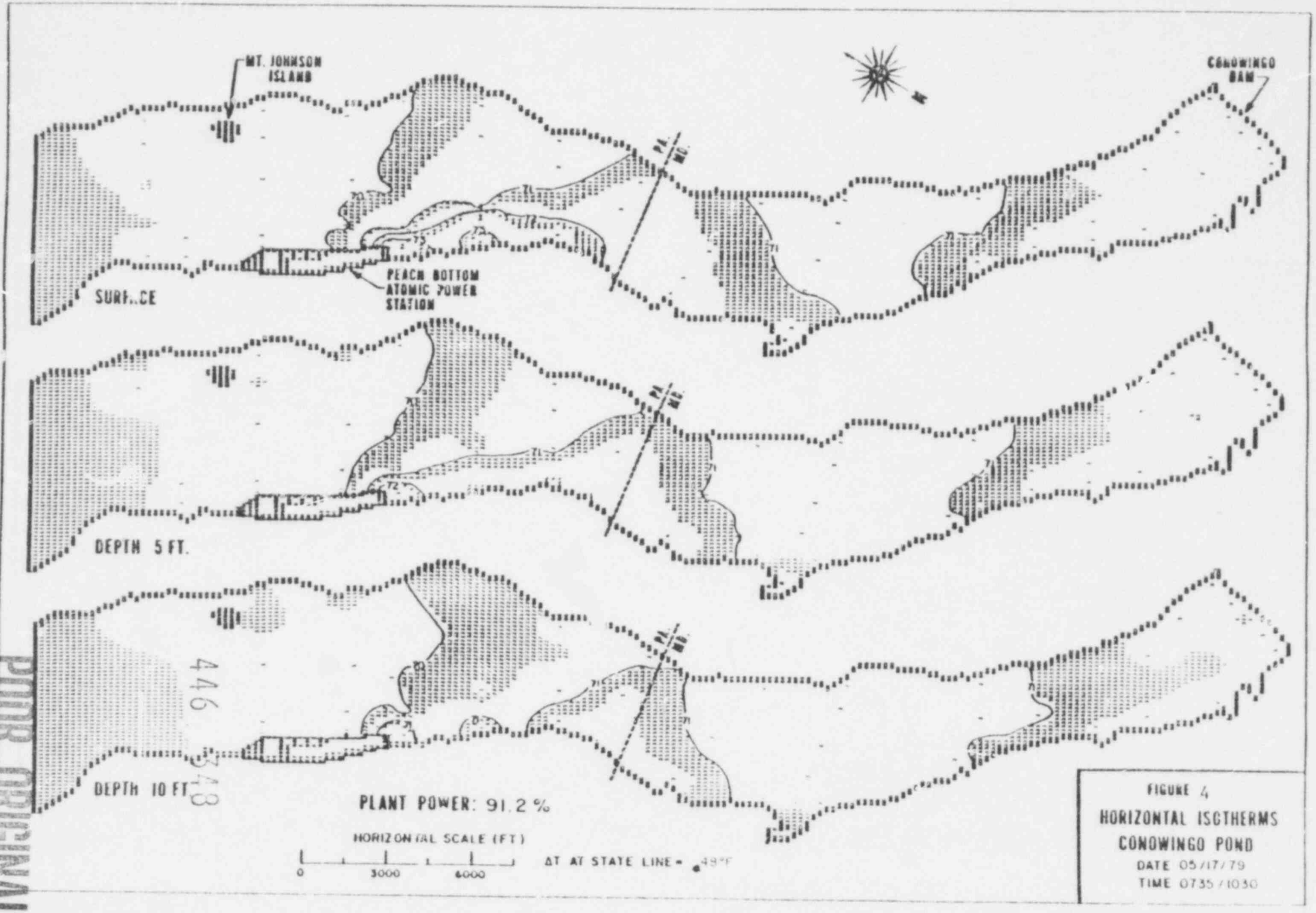

FIGURE 4
HORIZONTAL ISOTHERMS
CONOWINGO POND
DATE 05/17/79
TIME 0735/1030

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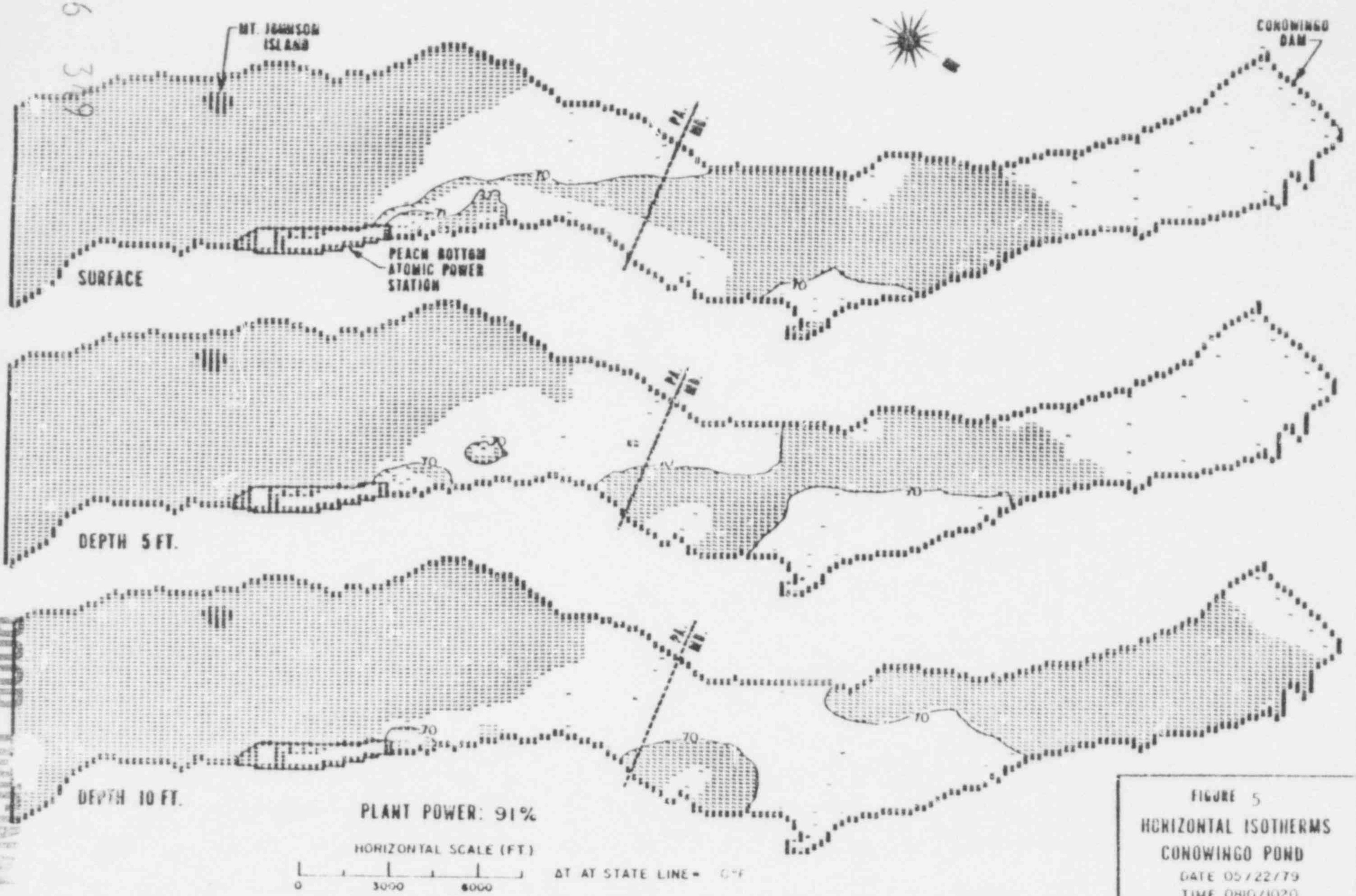

FIGURE 5
HORIZONTAL ISOTHERMS
CONOWINGO POND
DATE 05/22/79
TIME 0810/1020