

Peach Bottom Atomic Power Station

Thermal Mapping Report No. 82-6

For

October 22, 1982

For

Thermal Monitoring Requirements

Units No. 2 and 3

Philadelphia Electric Company

8211180298 821110  
PDR ADOCK 05000277  
R PDR

SUMMARY

On October 22, 1982 less than three cooling towers were in operation and river flows were less than 15,000 cfs. Therefore thermal plume mapping was performed.

The following table lists conditions on October 22, 1982:

Date	:	October 22, 1982
River Flow (cfs)	:	4200
Heat Discharged (BTU/hr)	:	$8.26 \times 10^9$
# of C.W. Pumps Operating:		6
# of Cooling Towers	:	2-3
Temp Discharge Canal °F <sup>(1)</sup>	:	70.9°F
Temp State Line °F <sup>(2)</sup>	:	65.5°F
Temp Holtwood Dam °F	:	58.8°F

$$\begin{aligned}\Delta T \text{ Plant} &= [(STA 23 - STA 1 - TCL)] 1.8 \\ &= [(18.6^\circ\text{C} - 15.9^\circ\text{C} - 1.5^\circ\text{C})] 1.8 \\ &= 2.16^\circ\text{F}\end{aligned}$$

(1) Bulk temperature of water discharged to Conowingo Pond from discharge canal.

(2) Pennsylvania/Maryland State Line.

Note: Station 1 is located upstream of PBAPS and Station 23 is located at the state line.

TABLE  
BOAT SURVEY INFORMATION

SURVEY DATE	10/22/82
TIME:	
Survey Start (EST)	0813
State Line (EST)	0958
Survey Finish (EST)	1135

HYDRAULIC DATA:

Pond Elevation Start (Ft.)	108.11
Pond Elevation Finish (Ft.)	108.20
Natural Flow (24 hour ave., CFS)	4,200
Conowingo Inflow (24 hrs. ave., CFS)	7,000
Conowingo Dam Draft (24 hr. ave., CFS)	4,200

PRAPS Power Output:

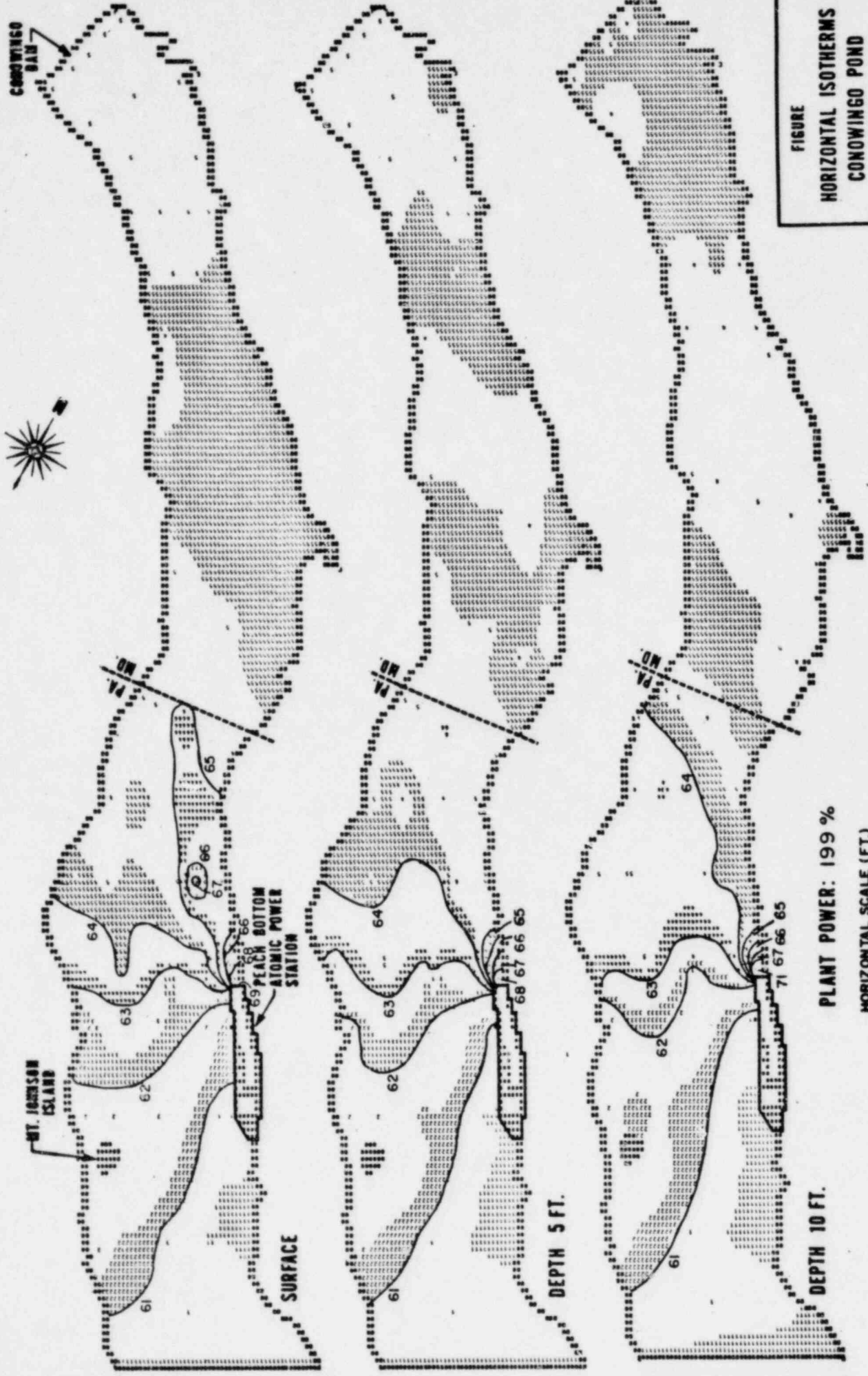
Unit 2: Thermal (MW)	3281.6
Electrical (MW)	1050.7
Unit 3: Thermal (MW)	3242.7
Electrical (MW)	1047.3

METEOROLOGICAL DATA:

Time (EST)	0841
Air Temperature (°F)	46
Relative Humidity (%)	48
Precipitation (24 hour total, in)	0
Wind Speed (mph)	6
Cloud Over	overcast
Location:	River Tower Weather Station
Wind Direction	310°

WATER TEMPERATURE (SURVEY)

PRAPS Discharge	°C, (°F)	21.66 (70.9)
Intake	°C, (°F)	15.53 (59.9)
ΔT	°C, (°F)	6.13 (11.0)
Pond Surface Max.	°C, (°F)	20.4 (68.7)
Min.	°C, (°F)	15.6 (60.1)
Pond Bottom Max.	°C, (°F)	19.5 (67.1)
Min.	°C, (°F)	15.2 (59.4)
No. of C.W. Pumps Operating		6
No. of Cooling Towers Operating		2-3



**FIGURE**  
**HORIZONTAL ISOTHERMS**  
**CONOWINGO POND**  
 DATE 10-22-82  
 TIME 0813-1135

PLANT POWER: 199 %  
 HORIZONTAL SCALE (FT.)



AT AT STATE LINE = 2.16 FT

DEPTH 10 FT.

DEPTH 5 FT.

SURFACE

PEACH BOTTOM  
ATOMIC POWER  
STATION

MT. JACKSON  
ISLAND

COMOWINGO  
DAM