

ILLINOIS POLLUTION CONTROL BOARD  
August 24, 1978

CENTRAL ILLINOIS PUBLIC SERVICE	)	
COMPANY,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB 78-90
	)	
ENVIRONMENTAL PROTECTION	)	
AGENCY,	)	
	)	
Respondent.	)	

THOMAS COCHRAN, NORTHRUP, HANNA, CULLEN & COCHRAN, APPEARED ON BEHALF OF PETITIONER;  
REED NEUMAN, ASSISTANT ATTORNEY GENERAL, APPEARED ON BEHALF OF RESPONDENT.

OPINION AND ORDER OF THE BOARD (by Mr. Goodman):

This matter comes before the Board for a determination, as required by Rule 203(i)(5) of Chapter 3, Water Pollution Regulations that thermal discharges from Central Illinois Power Company's (CIPS) Grand Tower Power Station have not caused and cannot be reasonably expected to cause significant ecological damage to receiving waters. A hearing was held on May 31, 1978. No members of the public attended. At that time, the Agency stated its opinion that thermal discharges from the power station will not cause significant ecological damage to the Mississippi River (R.10). All data referred to in this Opinion are from the Thermal Study prepared for CIPS by R.W. Beck and Associates pursuant to the requirements of Procedural Rule 602.

Grand Tower Power Station, located at mile 81.65 on the Mississippi River, has a gross power generation capacity of 202 MW, resulting in heat rejection of  $1.501 \times 10^9$  BTU/hr. (Ex. 1a). Cooling water, withdrawn from the Mississippi at a rate of 363.5 cfs is applied to the steam condenser and discharged back to the river with a temperature rise of 12-17°F (p.2-1). During the winter months, this once through cooling water flow is reduced to 181.8 cfs. and induced temperature rise across the condenser is increased to 34.40°F at maximum capacity (p.2-1).

The Thermal Demonstration submitted in this proceeding includes actual and theoretical plume studies as required by Procedural Rule 603(c). These studies indicate that the plume created by Petitioner's thermal discharge is of the "shoreline-attached" variety (p.3-4) and covers an area of less than two acres even during low flow conditions of autumn and winter (p. 3-16). The projected plume size under "worst-case" <sup>1</sup>conditions during these seasons would be 11 acres in winter and 18 acres in autumn (p.3-17).

Biological studies on the effects of Petitioner's thermal discharge on zooplankton, phytoplankton, benthos, fish and the riparian habitat indicate that ecological damage is highly unlikely (pp.4-3, A-1-A-6). Under normal and even "worst-case" conditions, a thermal plume of significant size is likely to result only in winter, when the ambient temperature will minimize its effect. During the summer season when ambient temperature is high, the plume is normally limited to an insignificant area. Under extreme "worst-case" <sup>2</sup>conditions the plume might be as large as five acres but would still have a minimal adverse effect on aquatic biota.<sup>3</sup> The effects of the thermal discharge are minimized further by the large dilution factor afforded by the Mississippi River.<sup>4</sup> The Thermal Demonstration also addressed the potential effect on recreation and commercial fishing. The study concluded that these activities will not be adversely affected (p.4-6).

It is the Opinion of the Board that Petitioner's Thermal Demonstration contains the information required by Procedural Rule 602. The Board finds that thermal discharges from CIPS'

---

<sup>1</sup>The worst-case condition is a computer simulation of the effect of having, simultaneously, the lowest seasonal river flow, highest temperature and peak power generation (See p.3-17).

<sup>2</sup>The extreme worst-case condition is a combination of the 7 day, once in 10 year low flow and the maximum temperature of record (See p.3-17).

<sup>3</sup>The computer model predicts a 5 acre plume within which temperature may be above 94°F (p.4-4). This may be lethal to certain nonmotile and sensitive organisms. Fish are predicted to avoid such an area, thereby escaping any potentially lethal effects (p.4-5).

<sup>4</sup>Cooling water discharge averages less than 1% of river flow (See Table 3-1, p.3-18).


Grand Tower Power Station have not caused and cannot be reasonably expected to cause significant ecological damage to receiving waters. Petitioner has, therefore, satisfied the requirements of Rule 203(i)(5) of Chapter 3 of the Board's Regulations.

This Opinion constitutes the Board's findings of fact and conclusions of law in this matter.

ORDER

It is the Order of the Pollution Control Board that the Petitioner has complied with Rule 203(i)(5) of Chapter 3 of the Regulations by demonstrating that its thermal discharges from the Grand Tower Power Station have not caused and cannot be reasonably expected to cause significant ecological damage to receiving waters.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted on the 24<sup>th</sup> day of August, 1978 by a vote of 5-0.

  
\_\_\_\_\_  
Christan L. Moffett, Clerk  
Illinois Pollution Control Board