

ILLINOIS POLLUTION CONTROL BOARD  
November 16, 1978

CENTRAL ILLINOIS PUBLIC SERVICE )  
COMPANY (MEREDOSIA POWER STATION), )  
 )  
 ) Petitioner, )  
 )  
 ) v. ) PCB 78-101  
 )  
 ) ENVIRONMENTAL PROTECTION AGENCY, )  
 )  
 ) Respondent. )

MR. THOMAS COCHRAN, ATTORNEY AT LAW, APPEARED ON BEHALF OF THE PETITIONER.

MR. STEPHEN GROSSMARK, ASSISTANT ATTORNEY GENERAL, APPEARED ON BEHALF OF THE RESPONDENT.

OPINION AND ORDER OF THE BOARD (by Dr. Satchell):

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 Public Service Company's Meredosia Power Station have not caused and cannot reasonably be expected to cause significant ecological damage to receiving waters. A hearing was held on July 19, 1978. The Environmental Protection Agency (Agency) has not filed a recommendation in this matter. However, at the hearing a memo representing the Agency's view point was introduced and entered as an exhibit (Resp. Ex. 1). Petitioner's basic presentation is the Thermal Study done by R. W. Beck and Associates pursuant to Procedural Rule 602. Some additional testimony was given at the hearing.

The Meredosia generating station is located on the Illinois River at mile 70.7 near the town of Meredosia, Illinois. This station has four units, one of which uses cooling towers. The total generating capacity of the three units using once-through condenser cooling is 388 MW (gross). The Thermal Study was done with an error in total maximum generating capacity. The figure used was 366 MW. R. W. Beck and Associates have submitted a letter explaining that the revised data were reviewed by their biological consultant and the determination was made that the small increase in thermal discharge associated with the difference between 388 MW and 366 MW would not change the conclusions of the report (Pet. Ex. 1A).

The heat rejection at maximum generation of 388 MW is  $2.083 \times 10^9$  Btu/hour (Ex. 1A). The temperature rise across the condensers varies with plant generation (and resultant heat rejection) and the number of circulating water pumps in operation. The condenser temperature rise for maximum generation and maximum circulating water flow (606.2 cfs) is 15.3 F (Ex. 1A).

Procedural Rule 602(c) requires that Petitioner's thermal demonstration include actual and theoretical plume studies. Petitioner's study indicates these were included (Ex. 1, p. 3-1). However, Respondent's Exhibit 1, the Agency's only comment on the study, concludes that only one actual plume study took place and that more actual plume studies should be done to verify the "typical" and "worst case" modelling results. At the hearing Kenneth Robinson, a Senior Environmental Engineer with R. W. Beck and Associates, testified that WAPORA, Inc. had done forty-three thermal plume surveys from November, 1971 through February 1975 (R. 15-17). The dates of these studies were inadvertently left off of Table 3-1 of Exhibit 1 and were submitted as Petitioner's Exhibit 2 (R. 19). These thermal studies were used by R. W. Beck to calibrate the correct computer modelling for site specific analysis to predict the expected thermal discharge conditions under typical and worst case conditions (R. 18). WAPORA also conducted biological studies during that time period which on evaluation demonstrated no significant ecological damage has occurred as a result of the discharge from the Meredosia station (R. 19, 20).

The Thermal Study concluded that the predominant discharge behavior configuration for the Meredosia plant is a shoreline-attached plume. Typical conditions for the winter, spring and summer seasons produce only minimal changes in temperature (Ex. 1, 4-4). During these seasons, under typical conditions, the areas within the 3 F and 5 F isotherms are less than one acre (Ex. 1, 4-4). During the lower flow of the typical fall condition, the areas within the 3 F and 5 F isotherms are eight acres and one acre, respectively (Ex. 1, 4-4). However, the ambient river temperature during the typical fall season is relatively low (60.8 F). During the worst-case condition in the fall season, the areas within the 3 F and 5 F isotherms are larger, reflecting lower river flow; however, the ambient river temperature is lower (Ex. 1, 4-4). Because of the low temperatures, the study concludes that it is highly unlikely that the waters within the 5 F isotherm will be avoided by fish; although the cross-sectional area of the river within the 5 F isotherm is thirty-four percent of the total cross-sectional area of the river, it will not have any

measurable effects on fish movements (Ex. 1, 4-4). Under extreme-worst case conditions, the condenser cooling water would comprise about seventeen percent of the total river flow (Ex. 1, 4-5). Under worst case and extreme-worst case conditions the temperature would rise into the 90's (Ex. 1, 4-4, 4-5). The Board notes that should these circumstances arise, a violation of Rule 203(i)(4) of Chapter 3 would occur and Petitioner would be required to take corrective action.

The study further concludes that field studies of the river ecology for the period 1971-1975 indicate increases in river temperatures due to thermal discharge have caused only relatively minor and inconsistent changes in the aquatic community (Ex. 1, 4-7). Future thermal discharges under typical conditions are unlikely to cause consistently measurable changes in the aquatic community (Ex. 1, 4-7). Worst case conditions are likely to cause minor changes in the aquatic community (Ex. 1, 4-7). With extreme-worst case conditions, it is probably that losses of sensitive biota will occur within the 5 F isotherm; however, the probability that these conditions will occur is very low (Ex. 1, 4-7). These various changes will be generally localized and are unlikely to result in significant ecological damage to the river (Ex. 1, 4-7). The thermal discharges are unlikely to have any adverse effects on other animal life or adverse secondary impacts on human recreational activities or any influence on commercial fishing in the river (Ex. 1, 4-7, 4-8).

The Board finds that Petitioner's Thermal Demonstration contains the information required by Procedural Rule 602. As noted at the hearing the Meredosia station has an eighteen year history of full operation with no apparent adverse ecological impact (R. 26). The Board finds that the thermal discharges from the Meredosia Power Station have not caused and cannot be reasonably expected to cause significant ecological damage to the receiving waters. Petitioner has satisfied the requirements of Rule 203(i)(5) of Chapter 3.

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

#### ORDER

It is the Order of the Pollution Control Board that Central Illinois Public Service Company has complied with Rule 203(i)(5) of Chapter 3: Water Pollution Regulations by demonstrating that its thermal discharges from its Meredosia 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 Order and Opinion were adopted on the 16<sup>th</sup> day of November, 1978 by a vote of 3-0.

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