



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Robert

May 19, 1977

Docket Nos. 50-10

50-237

50-249

Commonwealth Edison Company
ATTN: Mr. R. L. Bolger
Assistant Vice President
P. O. Box 767
Chicago, Illinois 60690

Gentlemen:

By letter dated August 30, 1976, you described the recent changes made in the NPDES Permit for Dresden Station, Unit Nos. 1, 2 and 3. The amended NPDES Permit allows continuous discharges from the Unit Nos. 2 and 3 discharge cooling lake to be as large as 500,000 gpm. The staff's assessment in the Final Environmental Statement (FES) of the impact on the Illinois River by Unit Nos. 2 and 3 used the value of 50,000 gpm for blowdown. Environmental Technical Specifications have not yet been issued for the Dresden Station. Therefore, to assure that the FES findings are still valid, by letter dated January 11, 1977, we requested data to evaluate the acceptability of this increased blowdown and intake on the physical and biological characteristics of the affected water bodies. Your responses dated February 18, 1977, and March 10, 1977, addressed our questions on the size of the thermal plume, and questions concerning impact at the intake caused by impingement and entrainment.

We have evaluated your submittal with regard to discharge effects. Seven thermal plume studies were made during periods when the blowdown rate was approximately 500,000 gpm. During these periods the size of the thermal plume was mapped and found to average 16.9 acres, with a maximum of 24.6 acres. The impact assessment in the FES is based on a 50,000 gpm blowdown and a maximum size of the 5°F thermal plume isotherm of 26 acres. Your study shows that, even with the higher blowdown rate, the plume size is within 26 acres. As it is the size of the plume rather than the blowdown rate which causes adverse environmental effects due to blowdown, we conclude that this mode of operation does not change the basis of the FES as to acceptable plume size, so no unacceptable impacts from the discharge will occur because of this change in operating modes.

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Two other areas which are likely to be affected by increased flow are the entrainment rate of young fishes and ichthyoplankton and the impingement rate. From our review of your entrainment study, we conclude that the yearly entrainment rate would be about five million fish eggs and about four million larval fish, assuming that the blowdown rate was continuously 500,000 gpm. These are conservative estimates since the blowdown rate is usually lower than 500,000 gpm. From given fecundity values for the major species in the vicinity of the site, the average fecundity for all the species listed was 193,400 eggs/mature female. Thus, through entrainment of eggs, the plant is effectively cropping the egg production by about 28 fish. This loss is insignificant in comparison to the average fecundity rate, so the number of fishes affected is small, and the impact is acceptable.

The entrainment study found that most of the species of larval fish entrained were minnows, suckers and herring. The average fecundity of these species is 412,182 eggs/mature female. Thus, the Dresden Station's cropping effect is to remove the egg production of about ten fish through entrainment of larvae. This latter estimate may not be conservative because the cropping is at an older age group than the eggs. Even though the effective cropping due to larval entrainment may be somewhat larger than estimated, we conclude that it is insignificant because of the small number involved, and because the types of species involved are neither game species nor of importance to the ecosystem.

Our review of your fish impingement studies indicates that an estimated one half million fish weighing approximately 21,000 pounds are impinged yearly at Dresden Station. Most of the fish impinged during the study period were young-of-the-year individuals which have high natural mortality rates. Of the estimated 1,400 fish impinged daily, less than 5% may be considered game type species, so that an estimated average of 64 fish of game species having a total weight of less than 4.5 pounds are impinged daily. The game fish impinged have an average weight of about one ounce, indicating that the large majority of them are small young-of-the-year fishes. Larger, mature individuals, which represent the reproductive potential of a species, constituted only a small proportion of the impingement loss. In view of the small size of the fish impinged, the large fraction of rough fish, and the small actual numbers of game species fish lost compared to fecundity, we judge these impingement losses to be acceptable.

MAY 19 1977

In summary, we find that your submittals of February 18, 1977 and March 10, 1977, verify the acceptability of the increased blowdown rate allowed by the amended NPDES Permit. These new limits will be incorporated in the proposed environmental technical specifications for the station.

Sincerely,

Original signed by

Don K. Davis

Don K. Davis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors

cc: see next page

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Commonwealth Edison Company

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May 19, 1977

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