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ENVIRON

Docket No. 50-247

Daniel R. Muller, Assistant Director for Environmental Projects, L

INDIAN POINT NO. 2 - REVIEW OF DRAFT FINAL STATEMENT

PLANT NAME - Indian Point No. 2

LICENSING STAGE - OL

DOCKET NUMBER - 50-247

RESPONSIBLE BRANCH - Environmental Projects No. 1

PROJECT LEADER - M. J. Oestmann

REQUESTED COMPLETION DATE - NA

DESCRIPTION OF RESPONSE - Comments on Indian Point Thermal Plume

REVIEW STATUS - Completed

The principal environmental impact of the Indian Point facility relates to potentially severe damage to the Striped Bass fishery and, by inference, other aquatic species. This evaluation is based principally on the assumed estuarine circulation of the river in the vicinity of the plant and the observed distribution of larval striped bass along the estuary.

We believe it is important to reiterate that the data available for estimates of non-tidal flow are inadequate and that the results of circulations based on this data are not satisfactory. Thus, the conclusions of both the applicant and the Regulatory staff and the staff's recommendations should be viewed in light of this basic weakness in their assumptions. This is particularly important if additional hearings on this matter becomes necessary.

There is little doubt, however, that the aquatic biota in the vicinity of Indian Point may be exposed to severe damage from operation of the plant utilizing a once-through cooling. Extensive biological sampling has confirmed that larval stages of the striped bass are present in large concentrations in the immediate vicinity.

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Attached are specific comments on the thermal plume model. Comments were prepared by Roy Overstreet.

Original signed by
H. R. Denton

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Enclosure:
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General Comments - Indian Point Thermal Plume Model

As pointed out in the report, both the applicant's thermal plume model and the authors' biological model suffer from the lack of adequate descriptions of the flow field and mixing parameters at Indian Point.

The data and calculations contained in References (10) and (12) are insufficient to describe either the spatial and temporal distributions of velocity or the horizontal mixing coefficient in the estuary. In particular,

- (1) It is felt that the combination of low salinity and very weak stratification in the estuary makes Eq. III-1 of doubtful value for accurate calculations of upper-layer flow. This inadequacy is reflected in the computations presented in Table III-3. The flow values do not increase monotonically in the seaward direction as they should for a positive estuary. Also, as pointed out by the authors, the upstream values do not appear to approach the stated river flow (It is not entirely clear that this is the case, since the last upstream station reported still contains very small amounts of salt).
- (2) The direct current measurements described in Reference (10) are not an adequate description of the net flow field, since they do not lead to conservation of mass. One shortcoming of the measurements is an insufficient number of observation points in any given cross-section. The same statement applies to the tidal volume flux derived from Fig. II-7. The quoted figures might represent an over-estimate resulting from the assumption of vertical and lateral homogeneity of the tidal current.
- (3) The authors' comments on page III-38 that the horizontal eddy coefficient is probably over-estimated appear reasonable. A possible cause for this overestimate lies in the consultants' use of a one-dimensional bulk diffusion coefficient in Eq. 6 of Reference (12). Such a coefficient would contain advective effects resulting from deviations of salinity and velocity from their cross-sectional means (See, for instance, Okubo and Carter, 1972).

Specific Comments:

Page II-21. Do these figures represent purely tidal flow, or is the river included? The last three lines are unclear. Is the river maintained at about 3000 cfs? Fig-II-4 does not indicate this.

Pages II-24-26. Salinity should be consistently reported in either ppm or ppt (preferably ppt).

Page II-26. Does line 1 refer specifically to Indian Point?

Page III-38. The summary of the last paragraph "...the presence of a net nontidal seaward flow in the salt-intrusion zone of the Hudson is clearly established by...." appears to be trivial. The presence of a river is enough to ensure this. "Nontidal seaward flow" should probably read "estuarine (or gravitational) circulation."

Reference

H. H. Carter and A. Okubo, Longitudinal Dispersion in Nonuniform Flow, Water Resources Research 8(3): 648-660 (1972).