

Semi Annual Report for the Period  
January 1, 1978 through June 30, 1978  
Pursuant to  
Section 5.6.1.2A of Appendix B  
to  
Facility Operating License  
Indian Point Nuclear Generating  
Units Numbers 1, 2 and 3

a. Effects of Chlorine and other Chemical Discharges on the Hudson River Ecosystem

The results of studies examining the effects of chlorine on a variety of Hudson River biota were reported in the New York University Progress Report for 1975. "The Effects of Temperature and Chlorine on Entrained Hudson River Organisms." Con Edison considers that the results presented therein complete the requirements for studies on the effects of chlorine and other chemical discharges on aquatic biota. Accordingly, no additional studies have been conducted.

b. Reduction in Frequency of Chlorinations and Concentrations of Free and Combined Chlorine

Based on the results of periodic condenser inspections, chlorinations were not needed and accordingly, none were performed during the entire reporting period. Current plans do not call for chlorination unless condenser inspections indicate that chlorination is necessary.

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c. Thermal Plume Model Verification and Mapping (Near and Far Field)

Routine surveys of the Indian Point station thermal plume were not conducted in April, May or June because there were no occasions during those months that both Units Nos. 2 and 3 operated simultaneously. Surveys are not required during the winter months of December through March. A report of the results of the routine monthly thermal monitoring program for the May 1977 survey was sent to the Commission by letter dated March 14, 1978.

d. Ecological Effects of Thermal Discharges

Pursuant to Federal Water Pollution Control Act Section 316(a), a report detailing the observed and predicted ecological effects of the Indian Point thermal discharge was filed with the U. S. Environmental Protection Agency on March 31, 1978. Copies of the report, entitled;

Indian Point Generating Station  
a 316(a) Demonstration

were also forwarded to NRC Staff Counsel and ORNL. Copies were sent to the Commission by letter dated July 21, 1978.

The demonstration contains the results of field and laboratory studies which indicate that the present once-through cooling system operation at Indian Point does not interfere with the protection and propagation of a balanced, indigenous population of fish, shellfish and wildlife in and on the

Hudson River estuary. It was also shown that there have not been, nor is there predicted to be, any significantly adverse effects on the representative, important species in the Indian Point region.

e. Potential Reduction in Dissolved Oxygen Through the Plant

Since thermal plume surveys in which dissolved oxygen concentrations in water passing through the plant are determined, were not conducted during the six month period (see item c above), no data are available to address this topic. However, it was noted in previous semi-annual report (January 31, 1978) that there were no discernible differences in dissolved oxygen concentrations between intake forebay and discharge canal water samples at any of the three Indian Point units.

f. Assessment of Performance of Fish Pumps as Installed

As reported in the July 1976 Semi-Annual Report, Con Edison considers the experimental program for fish pumps to be completed.

g. Results of the General Ecological Survey

The "1975 Year-Class Report for the Multiplant Impact Study of the Hudson River Estuary" should be published by early fall. This report, which includes data through June 1976, is the third in a series whose purpose is to provide information on the life history, distribution and population

dynamics of key fish species for use in assessment impact of once-through cooling at each Hudson River generating station.

h. Ecological Effects of Entrainment of Organisms

(1) The report prepared by New York University entitled;

"Hudson River Ecosystem Studies  
1976 Progress Report"

is currently being finalized and should be sent to the Commission shortly. This report summarizes the progress of studies conducted by NYU in 1976 to determine the effects of pump entrainment at the Indian Point generating station.

(2) The report prepared by New York University entitled;

"Distribution and Abundance of  
Striped Bass Ichthyoplankton  
in the Hudson River at Indian  
Point, and at the Indian Point  
Power Plant Intakes"

should be ready for publication in early fall. This report presents the results of simultaneous plant and river sampling conducted during 1977 to determine the relative concentrations of striped bass ichthyoplankton.

(3) The report prepared by Ecological Analysts, Inc. entitled;

"Indian Point Generating Station  
Entrainment Survival and Related  
Studies Annual Report 1977"

will be published in August. The primary objective of these studies was to determine the survival rates of ichthyoplankton that pass through the Indian Point generating station condenser

cooling system.

i. Evaluation of Head Loss Across the Fixed Intake Screens as a Function of Velocity Through the Screens and Fish Collected

As reported in the July 1976 Semiannual Report, an evaluation of the relationship between head loss and approach velocities as they relate to fish impingement is presented in the Texas Instrument Incorporated report entitled:

"Indian Point Impingement Study Report  
for the Period 1 January 1974 through  
31 December 1974"

which was filed with the Commission on 17 December 1975. The methodology used to evaluate this relationship is presented on pages III-2 through III-4, and the results of this evaluation are discussed on pages III-28 through III-34 of the report. This work is complete and no further analyses are planned.

j. Ecological Effects of Fish Impingement

Analysis and interpretation of impingement monitoring data collected in 1977 at Indian Point will be discussed in the 1977 TI Annual Report, "Hudson River Ecological Study In the Area of Indian Point."

k. Operational Experience of Air Bubblers at Units Nos. 1 and 2 to Prevent Fish Impingement

As reported in the Semiannual Report of January 28, 1977, an evaluation of the relationship between air bubbler operation and fish impingement is contained in the Texas Instrument Incorporated report entitled:

"Indian Point Impingement Study Report  
for the Period 1 January 1974 through  
31 December 1974"

which was filed with the Commission on 17 December 1975.

These results indicated that the air bubbler was not effective in reducing fish impingement at Indian Point. A New York State Department of Environmental Conservation consent order dated December 17, 1976 rescinded the condition in an April 28, 1972 consent order which required the use of air curtains at Indian Point Units 1 and 2.

l. Other Ecological Effects

(1) The results of TI's 1976 Indian Point study and impingement monitoring program are presented in a report entitled;

Hudson River Ecological Study  
In the Area of Indian Point  
1976 Annual Report

Specific program efforts were directed toward monitoring Indian Point impingement; determining abundance and distribution of fishes at standard sampling stations; studying the various

biological characteristics of striped bass (Morone saxatilis), white perch (Morone americana), and Atlantic tomcod (Microgadus tomcod), including age structure, growth, reproduction, and food habits; and assessing the feasibility of striped bass culture and stocking.

This report was submitted to the Commission on January 30, 1978.

(2) The results of a study conducted by Texas Instruments Incorporated to determine the efficiency of a submerged weir in reducing impingement at the Indian Point plant are described in the report entitled:

Evaluation  
of a Submerged Weir  
To Reduce Fish Impingement  
at Indian Point  
For the Period  
25 May - 29 July, 1977

This report which concluded that a submerged weir was not effective in reducing impingement at Indian Point was submitted to the Commission on April 17, 1978.

m. Evaluation of Entrainment Data

An evaluation of entrainment data will be presented in the three reports described in items h (1), h (2) and h (3) above.