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AUG 29 1973

Mr. Louis W. Pinata  
 Acting Chief, Operations Division  
 New York District  
 U. S. Corps of Engineers  
 26 Federal Plaza  
 New York, New York 10007

Dear Mr. Pinata:

In response to your request to Mr. W. H. Pennington, of the Division of Environmental Affairs, U. S. Atomic Energy Commission, we have reviewed your revised Draft Environmental Statement for the Bowline Generating Station owned by Orange and Rockland Utilities, Inc., and located in Haverstraw, New York.

As discussed in your letter, the cumulative effects of the Bowline Station as well as present and proposed plants on the Hudson River ecosystem was a subject of detailed discussion in the AEC hearings for the Consolidated Edison Company's Indian Point Nuclear Generating Plant, Unit No. 2 before the Atomic Safety and Licensing Board. Copies of the testimony offered by the Regulatory Staff are enclosed for your information (Enclosure 1). These documents deal with the subject of the cumulative effects of power plants on entrainment of fish eggs, larvae and plankton and on thermal discharges. At the March hearing, the ASLB ruled that these documents would be supplemental evidence to the Final Environmental Statement for Indian Point Unit No. 2 and would be a part of the record in the proceeding. The applicant and the intervenors, Hudson River Fishermen's Association, also presented their testimony. Extensive cross examination of all such material occurred and the information is available in the transcripts.

In regard to our telephone conversation of August 16, 1973, we understand you plan to prepare a final impact statement on the effects of all the generating plants on the Hudson River. Additional staff testimony with the proposed Findings of Fact and Conclusions of Law are also enclosed (Enclosure 2 and 3). It is expected that the ASLB will issue its initial decision within the next month or so in regard to the conditions required for the full term, full power operating license for Unit No. 2. We will be glad to forward you a copy of this when it becomes available.

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Mr. Louis W. Pinata

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In regard to Indian Point Unit No. 3, the staff plans to issue, within the next several weeks, a draft environmental statement which addresses the cumulative effects of all the plants on the river ecosystem. A copy of that statement will also be forwarded to you.

As we discussed on August 16, would it be possible to receive copies of reports referenced as numbers 1 through 5, 7 through 8, and 15 in the reference list after page 44 of your revised DES for the Bowline Station. This information would be helpful to us in our work in evaluating the impacts of the Indian Point Station.

Additional comments on your revised DES are enclosed (Enclosure 4). We hope these comments will be of assistance to you in the preparation of the final statement.

Sincerely,

Original signed by Daniel R. Muller

Daniel R. Muller, Assistant Director  
for Environmental Projects  
Directorate of Licensing

Enclosures:

1. Two Documents on Multiplant Effects
2. Staff's Rebuttal Testimony
3. Staff's Proposed Findings of Fact
4. Additional Comments on the Bowline Generating Station.

<i>MJO</i>	OFFICE ▶	L:EP-1	L:EP-1	L:EP	L:EP	
	SURNAME ▶	MJOestmann:mh	GWKnighton	BHarless	DRM Muller	state
	DATE ▶	8/13/73	8/ /73	8/ /73	8/27/73	

ADDITIONAL COMMENTS ON THE REVISED DRAFT ENVIRONMENTAL STATEMENT  
BOWLINE POINT GENERATING STATION  
ORANGE AND ROCKLAND UTILITIES, INC.  
HAVERSTRAW, N.Y.

The subject material submitted for the Orange and Rockland's Bowline Point Station, in conjunction with an application filed with the Corps of Engineers for a permit to dredge an inlet channel in the Bowline Pond, install a submerged discharge pipe, and construct a mooring facility at Bowline Point has been reviewed. The comments offered herein have been prepared solely on the basis of the information contained in the subject document.

1. Project Description

The licensing action to issue a permit under Section 10 of the River and Harbor Act of March 1899 to dredge an inlet channel, install a discharge pipe and construct a mooring facility at the Bowline Station has already taken place since according to page 1 the permits have already been issued to the applicant. According to Section 1.12 of your statement, the construction work for the above items has already been completed. Unit 1 went into full commercial service on October 21, 1972, and the construction of Unit 2 is approximately 99.5% complete. Thus, effects from any dredging and construction on the environment have already resulted.

Improvements of the site have been made by the applicant by removing and cleaning up the garbage and refuse, landscaping the site, and providing for a recreational area. These benefits, as well as that of providing the needed electrical power in this highly populated area of the country, will enhance the value of the area to balance against detrimental effects of plant operation.

2. Environmental Setting without the Project

In the general description of land use, a discussion of industrial development, population growth, environmental features including the terrain, waterways, fish and wildlife, with tables and/or figures should be provided. The population of the major towns within a ten mile radius of the site and the projected growth of the population; the industrial activities involved; a listing of fish and wildlife native to the area; and physical and chemical characteristics of the Hudson River should be discussed. A map of the area within ten miles radius should also be included.

An updated description with tables such as in Figure 16 and 17 for the need for the Bowline Units 1 and 2 in the applicant's service area as well as that for Consolidated Edison should be presented. Most of the information on power loads was provided based on data obtained in 1972 with future projections based on predictions made in January 1971. The power situation has certainly changed during the past year or so and a realistic picture of the power requirements for these units for the future would strengthen the discussion of the benefits of the station particularly since the Indian Point Unit No. 2 (873 MWe) has not been available during most of 1973. Thus, a reassessment of the need for these plants should be presented.

3. Environmental Impact of the Proposed Action

a. Land Resources

Improvements by the applicant have been carried out through upgrading existing streets and roads, eliminating a garbage dump, developing a recreational area, landscaping the site, and preserving parts of a natural wetlands.

b. Air Resources

The applicant should discuss the availability of low sulfur residual oil and provide assurance that the burning of low sulfur oil to minimize the impact on air resources will be carried out, particularly in view of the shortage of oil. The boilers also accommodate the burning of crude oil. As such, the impact of this fuel should also be evaluated. Information on the results of the monitoring of gaseous emissions since the operation of Unit 1 began in the fall of 1972 would be useful in order to obtain a more realistic evaluation of the incremental impacts on air quality when Unit 2 is operational in 1974. Methods to reduce or minimize impacts on air quality over the life of the station can be applied in advance of the operation of Unit 2 by considering alternative plant designs or operating methods. The applicant states that it will take such actions as needed, once the evaluation of the present detailed meteorological studies is completed and analysis of actual operating data resulting from operation of the first unit has been made. Any interaction of the gaseous emissions from the Bowline, Lovett, and the Indian Point Unit 1 stations should also be considered.

c. Water Resources

Beneficial environmental results will be provided by diversion of some of the water discharged from the discharge structure for flow augmentation with resultant flushing and water quality improvement of Minisceongo Creek and diversion of the discharge water to the Bowline Pond. Experience with the use of a common intake system of the Bowline plants may be applicable to resolving problems at the intakes of the Indian Point Station, where impingement of fish on the intake screens has been an unresolved problem.

In regard to the Bowline Pond inlet velocities of Table 1, it is believed that the total circulating water flow rates for both units is 768,000 or 384,000 gpm per unit. The applicant should describe in greater detail the intake and discharge structure, particularly how 15 ft/sec discharge velocity will be obtained through the ports in the discharge structure. See Reference 11 of the Draft Environmental Statement.

For the AEC staff's comments on Section 3.17 and 3.18 regarding thermal discharges, see Enclosure 1, "Considerations of Other Hudson River Power Plants," in which information on thermal discharges from all the power plants is presented by staff's consultant, M. Siman-Tov in an article dated February 8, 1973. Additional information is also in the Indian Point No. 2 Final Environmental Statement and will also be provided in the Draft Environmental Statement for Indian Point Unit No. 3 due to be issued shortly. The AEC staff results and conclusions regarding the temperature increase of the thermal plume from all the plants on the river are quite different from those presented in the Bowline draft statement because of the difference in thermal models and assumptions used by the applicant's consultants as compared with those used by the AEC staff.

In regard to Item 3.20, the applicant is to be commended for carrying out a testing program to determine the minimum dosage of chlorine to the circulating water system to control algae growth in the condensers. Again, information as to the amount used on a daily basis should be reported. We are concerned about the ecological aspects of chlorine discharges.

Of concern also is any oil spillage which could occur during any fuel oil transfer. The applicant appear to have plans and procedures available to avoid and minimize the effect of accidental oil spills in accordance with recommended Federal standards and practices.

Information as to the "small amounts of wastes" (page 19) should be detailed. The Draft Statement should discuss the status of a water quality discharge permit (Section 13 of the Refuse Act or Sections 402 and 401 of the FWPCA of 1972).

d. Marine Biology

The AEC staff believes that the Bowline Pond with its open inlet channel from the Hudson River to the Pond will serve to improve the chances of attracting fish and organisms into the pond because the pond provides protected habitat for species. As a result an increased mortality by impingement of aquatic organisms at the intake structure could occur. Recirculation of the heated discharges, particularly in the wintertime, will also attract more fish into the pond which can be entrapped and killed at the intake screens. We understand that the applicant is presently monitoring fish kills at the intake structures at the Bowline Pond Unit 1 but we have no data to evaluate what is occurring. We recommend that a good monitoring program be carried out continuously for some time to accumulate data which will be used to adequately predict the long term effects of plant operation because of impingement. If fish kills are excessive, possible alternatives to the present design and operation of the intake structure may be warranted. Alternative techniques, such as air bubblers which are being tested at the intake screens of Indian Point plants, may be needed. If fish are attracted to swim from the river into the pond through the inlet channel, some control device such as a screen at the inlet channel may be needed to keep at least the larger fish from swimming through the inlet channel. The applicant plans to study and test a number of conditions as mentioned on page 21 to limit impingement effects. Studies at the Indian Point intakes may also provide useful information to consider alternative designs of the intake structure.

The subject of entrainment of organisms as they pass through the intake structure and the 1200-foot long discharge pipe before being discharged through the submerged diffuser at 15 ft/sec is not adequately discussed (see Enclosure 1, Part 2 by the AEC staff consultant, P. Goodyear, dated February 8, 1973). The staff's concern regarding the cumulative effects of entrainment of fish eggs and larvae from operation of the present and proposed power plants on the Hudson River is discussed in Goodyear's article. We believe that the statement on page 22 that no damage to plankton is expected is unsupported. We, therefore, recommend that the applicant carry out a detailed ecological surveillance

program of the extent of entrainment of eggs, larvae and plankton removed from the Hudson River and passed through the inlet channel and the intake-discharge structure because of the force of the circulating water pumps. In our entrainment model we assumed 100% mortality of organisms as they pass through the intake-discharge structure. The long route through the Bowline Point circulating water system with a discharge at 15 ft/sec would probably result in extensive shock to any organism during passage, and the chances of survival would be limited. The significance of entrainment depends on the amounts of eggs, larvae and plankton removed from the main river in relationship to the circulating water system flow rate. This entire subject has been one of the most important issues of controversy in the Indian Point hearings and should be investigated further during your study of the cumulative effects of present and proposed power plant operation on the Hudson River.

Haverstraw Bay is an important nursery area of young-of-the-year striped bass and other species of importance to commercial and sport fisherman. The Bay is particularly an important spawning and growth area for the bay anchovy. This species is a primary element in the food chain of other fishes. Taking into account these considerations regarding entrainment and the significance of the location of these power plants on the Hudson River, we believe that the statement on page 23 that no adverse effects on fish in the Bowline area is expected is questionable. Further investigation on this subject is needed.

#### 4. Adverse Environmental Impacts

Adverse effects discussed in Section 4 do not include the potential effects of entrainment mentioned above. There is no discussion on the subject of loss of dissolved oxygen when the circulating water passes through the condensers.

#### 5. Alternatives to the Proposed Action

Alternatives which need further detailed discussion include:

- a. Consideration of the impacts from the lack of availability of oil, particularly low sulfur oil with subsequent usage of oil with higher sulfur concentrations, or coal or other fuel sources.
- b. Alternative intake designs at the inlet channel to Bowline Pond and at the intake structure of Units 1 and 2 should be considered for reduction of fish impingement.
- c. A greater detailed discussion of alternative closed-cycle cooling systems to reduce impacts from the once-through cooling system

should also be addressed (see the Indian Point 2 Final Environmental Statement and the other documents enclosed with this letter).

- d. Little evidence exists in this Draft Statement regarding independent weighing of the benefits and costs. A detailed discussion is needed of the technical evaluation of the benefits and the costs, not only of once-through cooling of the present and proposed power plants but also of alternative cooling systems.

6. Relationship between Local Short-term Uses and Long-term Productivity

In item 6.02 the statement that heat will not result in cumulative effects should be reconsidered. Although all heat eventually transfers to the atmosphere, as stated in your DES, heat will be discharged continuously to the receiving water body such that thermal releases have the potential of affecting aquatic organisms when they are exposed to the thermal plume. Thus, when taking into account the operation of once-through cooling of all the present and proposed power plants, we believe that the cumulative effects of heat discharged could adversely affect the aquatic organisms over the long-term. As a result the productivity of the ecosystem can be adversely affected.

7. Irreversible or Irretrievable Commitments of Resources

Since permits for dredging and construction under Section 10 of the River and Harbor Act of 1899 have already been granted, land resources as stated in Section 7.0 have already been committed. However, the last sentence in item 7.04 on page 33 should be looked into in view of our comments on entrainment as discussed in Section 3.

In summary, the technical detail and supportive information in this statement are lacking in depth. Insufficient discussion of impacts such as entrainment of fish eggs and larvae has been included. Evaluation of alternatives has not been greatly quantitated and there is little evidence of independent weighing of benefits and costs associated with the proposed action.