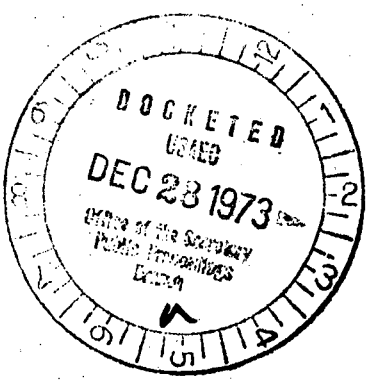

BEFORE THE UNITED STATES
ATOMIC ENERGY COMMISSION

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IN THE MATTER OF

Docket No. 50-286

CONSOLIDATED EDISON COMPANY
OF NEW YORK, INC.
(Indian Point Station, Unit No. 3)

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COMMENTS ON DRAFT ENVIRONMENTAL STATEMENT BY HUDSON RIVER FISHERMEN'S ASSOCIATION AND SAVE OUR STRIPERS

Preliminary Statement

This memorandum of comments is submitted to the U.S. Atomic Energy Commission, Directorate of Licensing, pursuant to notice published on October 23, 1973, 38 (No. 203) FEDERAL REGISTER 29243, so that the issues treated herein may be fully considered in the preparation of the Final Environmental Statement to be issued by the A.E.C. under the National Environmental Policy Act of 1969 ("NEPA"), 42 USC 4321 and the A.E.C.'s regulations in Appendix D, 10 C.F.R. Part 50.

These comments concern the "Draft Environmental Statement by the Directorate of Licensing, United States Atomic Energy Commission, in relation to operation of Indian Point Nuclear Generating Plant Unit No. 3"["DES"] dated October 1973 and released October 16, 1973 for the

4. Complete assessment of the environmental impact of I.P.3 requires examination of Con Ed's Cornwall (Storm King Mountain) proposed pump storage generating plant as well as all other major water uses near I.P.3.

5. The cumulative impact of I.P.3 over Indian Point Unit No. 2 ("I.P.2") justifies natural draft cooling towers for I.P.3 on the same facts as I.P.2.

While the DES gives these issues careful and perceptive attention, nonetheless the DES fails to examine adequately all aspects. Before the final environmental statement is released, more comprehensive analysis must be set forth concerning (i) impingement and means to minimize adverse impact, (ii) need for cooling towers, including Cornwall (Storm King Mountain) influence, (iii) construction time for cooling towers, (iv) reduced operation before cooling towers are operational, and (v) cost/benefit justification for cooling towers, reduced operation and other measures to conserve and preserve the Hudson's aquatic resources.

HRFA and SOS will comment on the DES with respect to each of these five issues here.

At the outset HRFA and SOS stress that the DES is largely a very competent and thorough document. It is far superior to the draft environmental statement issued for I.P.2, and it has taken into account the extensive expert evaluation which the I.P.2 licening proceedings produced. The A.E.C. Regulatory Staff is to be commended for its work and its recommendation requiring a closed cycle cooling system for I.P.3.

I. Impingement Damage Must Be Curbed

The DES properly establishes impingement as a major potential problem involving substantial fish kills for I.P.3 based on the experience with Indian Point Unit 1 ("I.P.1"), (pp. V-29-37). The DES acknowledges that "the precise cause of the impingement problem is not completely understood." (p.V-31).

While the New York State Department of Environmental Conservation has required Con Ed to recirculate 60% of its flow when ambient water temperatures are 40° F. or lower for I.P.1 and I.P. 2 (p. V-33) and although Con Ed has air bubble screen devices in operation (p. V-29), it is not clear that any measures will in fact eliminate impingement fish kills. Con Ed's Fish Advisory Board (p. V-36) does not appear to have offered any solutions.

Indeed air bubble screens have not proven effective. See W.A. Maxwell, "Fish Diversion For Electrical Generating Station Cooling Systems," N.U.S. Corp. S.N.E.-123 (1973); J.R. Clark, "Electric Power Plants In The Coastal Zone: Environmental Issues" at V-2, V-7 and V-54 (American Littoral Society and Striped Bass Fund 1973). Moreover, Con-Ed's Fish Advisory Board (p. V-36) does not appear to have offered any solutions.

The impingement problem is over a decade old since it began with I.P.1. Con Ed has shown an inability to cope with this problem.

3. Alternatively, to minimize irreversible adverse impact between such time as an operating permit is granted and cooling towers are operational, Con Edison should be required to restrict I.P.3 operations during the critical spring spawning period. Such restrictions could include compensating for reduced operation by I.P.3 by (1) electricity use conservation and (2) securing alternative sources of electrical power.

B. These measures are required because of the substantial injury which once-through cooling will cause to the Hudson's acquatic resources.

1. The impingement and entrainment figures given to date are minimal and support the requirements for both cooling towers and restricted operations.

2. The commercial and recreational sport fishing economies of the Hudson River, the Atlantic coastal region and Long Island must be protected against the irreversible losses which unconditional operation of I.P.3 would cause.

3. The Hudson River is a priceless natural resource, a productive breeding area for resident fish species and migratory oceanic species such as striped bass, shad and herring. The unique value of this resource must be fully protected for present and future generations in our country.

A.E.C. by George W. Knighton, Chief, Environmental Projects Branch #1, A.E.C. Directorate of Licensing.

The Hudson River Fishermen's Association ("HRFA") and Save Our Stripers ("SOS") are parties in the above captioned matter brought on by the Consolidated Edison Company of New York, Inc. ("Con Edison" or "Con Ed") involving Indian Point Nuclear Generating Plant, Unit No. 3 ("I.P.3"). HRFA and SOS petitioned for and were given leave to intervene by Order of the Atomic Safety and Licensing Board.

HRFA and SOS are interested in preserving the aquatic resources of the Hudson River, especially the striped bass and other fish. These interests prompt both groups to press the following concerns in connection with the DES:

A. Every possible and practical measure must be taken to protect the Hudson's aquatic resources as conditions precedent to Con Edison operating I.P.3.

1. Unless new techniques are found to reduce impingement of young-of-the-year fish at the intake screens, Con Ed must reduce operations to avoid fish kills.

2. To avoid massive destruction of phytoplankton, zooplankton and eggs and larvae of many fishes from entrainment in Con Ed's proposed once through cooling systems, assuming use of natural draft cooling towers a closed cycle cooling system must be installed for I.P.3 by May 1, 1977 or as soon as possible, and an operating permit should be delayed until such towers are operational.

The FES must set forth the possible parameter of losses from impingement for white perch, striped bass and other fish. It must estimate both the short term and long range environmental impact from impingement.

The DES recommendation that Con Ed submit a plan including "means of reducing . . . impingement on the intake structures" by July 1, 1974, appears unrealistic. (p. XI-74). Con Ed has no plan. The FES should independently explore impingement and make recommendations. NEPA requires nothing less. Such analysis by the AEC Regulatory Staff is necessary to consider environmental impact "to the fullest extent possible," as required.

Among the aspects of impingement requiring discussion is the effect of a common intake structure and different means of design to minimize intake velocities. Avoidance devices employing light, sound or electrical techniques and guidance devices such as louvers must be scrutinized. Traveling screens and lift baskets must be analyzed. The effect of a previous rock dyke in front of intake structures must also be studied. Since Con Edison has indicated that it is exploring these techniques, so should the Regulatory Staff. See "Applicant's Responses to Interrogatories from Hudson River Fishermen's Association and Save Our Stripers" at 66-68 (Nov. 30, 1973)

The reduced flow and protection against impingement which cooling towers afford (p. XI-30) should be further examined as well in light of the analysis of other impingement-avoidance techniques. Reduced winter intake should be explored also. A cooling water intake flow velocity of .5 feet/second (1/3 m.p.h.) has been recommended as the most appropriate standard for open cycle cooling systems in order to minimize intake fishkills. See J.R. Clark, supra (1973) at p. VIII-2.

II. Cooling Towers Are Needed At I.P.3.

A. The Incremental Adverse Impact on Fish from I.P.3 Requires Cooling Towers.

Closed-cycle cooling has been mandated for I.P.2. In the DES, the AEC Staff concludes that the same must be required for I.P.3. This requirement in the DES is not only consistent but crucial if the aquatic resources of the Hudson are to be preserved.

The impact from operation of I.P. 1 and I.P.3 with once-through cooling is slightly greater than that estimated for I.P.1 and 2 operating with once-through cooling. (p. XI-46.) The reasons for mandating closed-cycle cooling at I.P.2, therefore, provide commensurately greater cause for mandating closed-cycle cooling for I.P.3.

If I.P.1 and I.P.3 are both allowed to operate with once-through cooling, while only I.P.2 has closed-cycle cooling, there will be an estimated annual loss of 1.6 million fish from impingement; an estimated reduction of 15 to 44 percent in striped bass juveniles due to entrainment; the possibility of detrimental effects from waste heat, reduced oxygen levels and chlorine; the probability that the combined effects of impingement and entrainment over several years would substantially decrease the populations of other fish species. (p. XI-46.) By making a comparison of these predictions with those where I.P.3, as well as I.P.2, operates with cooling towers - either mechanical or natural draft - one can easily

see the substantial incremental impact I.P. 3 will have unless cooling towers are required.

If I.P. 2 and I.P. 3 both operate with cooling towers, there will be an estimated annual loss of .6 million (vs. 1.6 million) fish from impingement; an estimated reduction of 6 to 21 percent in striped bass juveniles due to entrainment (vs. 15 to 44 percent); a high potential for a much greater reduction of detrimental effects from waste heat, reduced dissolved-oxygen levels and chlorine; a sizeable reduction in the probability that the combined effects of impingement and entrainment over several years would substantially decrease the striped bass fishery and a parallel reduction in similar effects that would possibly cause a substantial decrease in the populations of other fish species. (pp. XI-46, XI-47.)

The Staff's analysis clearly shows that unless closed-cycle cooling is required, the complex estuarine environment of the Hudson River will be severely impacted from long-term operation of I.P.3. It is therefore essential that operation of the plant guarantee an acceptable limit to the environmental costs by installation of a closed-cycle cooling system.

B. Cornwall (Storm King Mountain) Must be Reviewed in order to understand the impact I.P.3 will have.

The complete assessment of the environmental impact of I.P.3 requires an examination of the impact of the Cornwall pumped storage project ("Storm King") as well as of the other

power plants already located in the Hudson River. In order to accurately portray the environment in which I.P.3 will be operating, the AEC must look to the present and reasonably foreseeable effects on the estuary which are being or will be caused by other installations. Any other course fails to analyze I.P.3's impact on the environment as it is or will be.

The DES has predicted the impact of other installations on the Hudson River aquatic life, but states only that the operating of Storm King, which is expected to be operating by 1979, "would substantially increase these predictions." (pp. V-48, V-49.) No further analysis is given, nor is any attempt made to quantify the impact.

Storm King has been licensed by the FPC and, as the DES recognizes, is scheduled to begin operation in 1979. During the hours it is in operation, it will withdraw from the Hudson River more than twice as much water as I.P.1 and 2 combined. Predictions have been made by the AEC Staff and others that the plant might well withdraw something in the range of 30 to 40 percent of all the striped bass larvae in the Hudson River. Goodyear at I.P.2 hearings, Tr. 9324-30; Affidavit of John Clark in Support of HRFA Petition to FPC for Hearing and for Order Modifying Operation of Pumped Storage Project, February 7, 1973, at p.4; Affidavit of Dr. Charles Hall in Support of Scenic Hudson Preservation Conference Petition to FPC to Reopen and for Further Hearings

in the Storm King Proceeding, March 21, 1973 at p.5. In addition, Hall predicted that mortality of at least 50 percent of those eggs and larvae withdrawn would not be unlikely. Hall Affidavit at p.6. Such reductions in striped bass juveniles flowing from operation of Storm King make installation of closed-cycle cooling at I.P.3 all the more imperative, since its operation with once-through cooling would further reduce the striped bass fishery and could result in its demise altogether.

The likelihood that Storm King will have a substantial adverse impact on the Hudson River fishery is supported by the AEC Staff's recent revelation that the 2.8 percent withdrawal rate which was predicted by the "Hudson River Fisheries Investigation 1965-1968" (Carlson-McCann Report) and used by the FPC in drawing its conclusion of minimal plant impact when it issued the license for Storm King, represents not an annual withdrawal rate as was previously thought, but a <u>daily</u> withdrawal rate. AEC Staff at ORNL, Storm King Analysis Requested of Senator A. Ribicoff, December 3, 1973.

Inclusion in the FES of an analysis of the impact Storm King is likely to have on the striped bass fishery should be facilitated by the fact that the AEC has agreed to do a 6 month study of just this for Senator Ribicoff. See Letter of Dr. Dixie Lee Ray to Senator Ribicoff, October 31, 1973.

III. Construction Time for Cooling Towers Must be Advanced

The DES would recommend permitting use of a once-through cooling system until May 1, 1978 (p. XI-72). This period of time is excessive given the current state of the art for closed cycle cooling systems by natural draft cooling towers.

The DES fails to show why such a long period is required. The system should be mandated for completion by May 1, 1977, assuming an operating permit may be granted by the end of 1974 with natural draft cooling towers required.

The Con Ed construction time estimates must be scrutinized independently by the A.E.C. Regulatory Staff and discussed in the FES. The design time needed should largely be satisfied by Con Ed's preparations in connection with I.P.2, and actual construction should substantially overlap.

A rigorous and tight construction schedule for cooling towers must be required. Con Edison should not build in a cushion at the expense of the fish. Con Ed's poor record of construction efficiency should be a basis for a strict construction deadline, not an extensive one.

The DES should explore further the time periods within which Con Edison could provide cooling towers. Such cooling towers are required for I.P. 2, the question of economics of time and expense in constructing both unit's closed cycle cooling systems must be discussed.

IV Reduced Operation is Necessary Each Spring at I.P.3

In order to protect the spawning in the area of I.P.3, as a minimal requirement until a closed cycle cooling system becomes operational, I.P.3 should not be permitted to function at all during the peak spawning season for the striped bass and other fish on the Hudson River estuary. This is necessary to minimize the damage to aquatic resources from impingement and especially entrainment. The DES should examine this alternative.

Subject to annual variation, the period from the end of April through July represents the period of peak losses of larvae and eggs because of entrainment (pp.V-37-49; App. 13) Con Ed should plan to use energy sources other than I.P.3 during this critical period. If interim operation with base design is allowed at all, the DES should explore what can be done to limit operation in the April-July period for each year before closed cycle operates.

V. Cost/Benefit Evaluation Must Be Scrutinized

HRFA and SOS have no quarrel with the DES conclusion that, by the most careful cost/benefit analysis set forth, cooling towers must be installed at I.P.3. The recommendation that interim operation be allowed until 1978 with once-through cooling, however, cannot survive a close cost/benefit analysis.

The benefit, presumably, is the availability of I.P. 3 generated electricity. Even assuming Con Ed can operate I.P. 3 without breakdowns so that the electricity would actually be available, a careful review of the off-setting costs would reveal that the costs outweigh the benefits.

A. COSTS -

The effect on aquatic resources of once-through cooling of I.P. 1, 2 and 3 operating together without cooling towers has been set forth in the DES. It appears for impingement (Table X1-6 at X1-31) and entrainment (Table X-12 at X1-43). The effect is that described as the base design.

Based on Con Ed's minimal estimates for 3 years of I.P. 1, 2 and 3 once through cooling (actually a fourth year of I.P. 1 and 2 together exists also), 28,600 lbs. per year of fish would be impinged, or

recreational striped bass fishing on the Hudson and off the Atlantic Coast and Long Island would be felt.

The adverse economic impact on recreational striped bass fishing is ignored by the DES. In weighing the costs of interim operation at base design of I.P. 3 with I.P. 1 and 2, this impact must be considered.

The striped bass is one of the most sought after game fish in the area off New York and along the Atlantic Coast. The fish prefer waters near shore and are seldom found more than several miles away. The pressure on striped bass from increased numbers of anglers, commercial haul seining, pollution, insecticides and run-offs, and most significantly the losses from once through cooling at existing Hudson River power plants, has reduced the catch significantly in recent years. At stake here, therefore, is avoiding a new and substantial adverse impact. As Edward Raney noted, "Wallace and Neville (1942) have outlined the persistent problems of the [striped bass] fishery and have focused attention on the factor of removal of the striped bass by man --- the only important factor which is immediately controllable." E.C. Raney, "The Life History of The Striped Bass", 14 Bull. Bingham Oceanogr. Coll. #1 (1952).

"Man" here is Con Edison. The Company must install cooling towers and must not use I.P. 3 without cooling towers because of the harm which will result if 50% of striped bass are eliminated for each of three years running.

Such a fish loss would injure the conservatively estimated 160,000 striped bass anglers in New York. See D. G. Dewel and J.R. Clark, "The 1965 Saltwater Angling Survey", Dep't of Interior, Bur. of Sportfisheries and Wildlife, Resource Publ. #67 (July 1968). The number of these fishermen increases by 6.7% annually. I.M. Alperin, R.V. Miller, P.R. Nichols, and J.E. Sykes, "Striped Bass," Marine Resources of The Atlantic Coast Series, Atlantic States Marine Fisheries Comm., Leaflet No. 8 (1966). It is clear that well over 200,000 fishermen seek recreation from the striped bass in New York alone.

Each such striped bass angler spends large sums for supplies and equipment. An average of $9.00 a day money spent per striped bass angler was estimated in 1959, as both the Department of the Interior (Fishing Leaflet #592) and the Department of Fish and Game of the State of California. Even without adjusting this figure for the inflation of the last two decades, with a minimum of 16 days of fishing a year as a conservative estimate, each fisherman contributes $144 a year to the economy in pursuit of striped bass, or $28,800,000 a year for a conservative estimate of all New York's stiper fishermen before inflation adjustments.

The value of the striped bass must be figured in terms of such expenditures for charter boat operators, bait and tackle dealers, motel owners, gasoline stations, restaurants and taverns, food stores, dealers and manufactures of boats; special clothing, and the like.

The value of these market components cannot be ignored. With adjustments for inflation, the annual striped bass fishermen contribute in excess of $80,000,000 to the State's economy.

The DES must evaluate how much interim I.P. 3 operation with once through cooling before closed cycle cooling is installed would cut into this striped bass recreational fishing industry. A 50% reduction in available fish would cut into the economy and into the ability of the fish to regenerate its numbers.

It would be a tragic blow if cooling towers were required only to go into operation too late to avert massive reductions in fish because of once through cooling for 3-4 years. The DES must come to grips with this issue.

Such an economic analysis reveals the full worth of the resource. The 1970 Saltwater Angling Survey (U.S. Bureau of Commerce National Marine Fish Service) must be studied to bring the analysis more current. The value of the striped bass fish alone has been computed for the North and Middle Atlantic at from $59 to $146 million per year. The Hudson-supported striped bass fishery in fish alone totals $75.4 million annually. J.R. Clark, "Testimony on Effects of I.P. Units 1 and 2 on Hudson River Aquatic Life" (Docket 50-247, Oct. 30, 1972) pp. 2-4. To these raw fish figures, the DES must evaluate the economic multipliers if true costs are to be established.

B. Benefits

The benefits also need scrutiny during the interim period before cooling towers operate. Con Edison's need for the power which I.P. 3 can provide should compel an earlier installation of cooling towers, rather than a later date. Indeed, it should compel the earliest possible date. In the meantime, Con Edison should supply the power it needs from alternative presembly abailable sources.

Con Edison's position is not as bleak as might appear.

The DES review in Chapter IX on the need for power could usefully be compared to the soon to be released report of the Regional Plan Association and Resources For The Future establishing that the metropolitan New York area including Westchester uses 6.4% of the nation's energy although 10% of the nation's people live here. 35.1% of all energy goes to transportation, 28.9% to residential uses, 24.9% to commercial and public facilities and 11.1% for industry. This is below the national average figures. See Regional Plan Association Resources For the Future,"Regional Energy Consumption" (1973).

To supply the portion of these demands which is Con Edison's responsibility, it is improving its transmission capabilities by 1975 and thus can purchase power (Table X-2, p X-2).

The DES concedes (at p. X1-2) that "It would appear that adequate net import capability exists to make purchased power a viable alternative to Indian Point Unit No. 3." It notes that as inavailable Con Ed capacity could require I.P. 3 between 1973-75 nonetheless (Table X-9 and X-10, p. X-25, p. X1-3).

The DES does not, however, factor in the energy conservation measures now in effect and soon to be required by the N.Y.S. Public Service Commission. It must include these.

The DES also fails to consider the facts set forth by the City of New York as to Con Edison's additional generating capacity. While estimated with respect to the energy potential of Con Edison's Cornwall (Storm King Mountain) plant site, the facts are directly relevent to alternative power sources during the construction of cooling towers for I.P. 3. The N.Y.C. Environmental Protection Administration report establishes that Con Edison could save fuel oil by linking new gas turbines to wasteheat boilers to produce steam for both electrical power and steam heat. While the N.Y.C.E.P.A. report is framed in the 1980-1992 Cornwall (Storm King Mountain) time frame, the same facts should have been treated in the DES with respect to the 1973-75 time frame. See N.Y.C. Environmental Protection Administration, "An Alternative to Storm King" (November 30, 1973).

Since Con Edisons predicted peak load over the next few years is always within the total system capacity (Fig. X-6, p. X-23), it hardly seems justified on a cost/benefit analysis to endanger the striped bass population and striped bass recreational and commercial fishing economy by permitting interim operation of I.P.3 before cooling towers are installed. Even if outages reduce total capacity, the alternative power sources available to Con Edison should be used to get it through the next short period until I.P.3 has a closed-cycle cooling system.

Conclusions

The extensive losses which will result from even a short period of operation of I.P.3 with once-through cooling cannot be accepted. The DES is deficient in failing to closely examine this issue. Similarly, the DES should review intensively the entire impingement problem rather than simply pass the burden back to Con Edison whose experience hardly commends it for such a review. The cooling towers should be operational by May 1977 at the latest, and if Con Edison cannot meet such a deadline the plants should not operate with closed cycle cooling after May 1, 1977. Finally, Con Edison must curb operations during the spring spawning season in order to protect the striped bass and other fish resources of this priceless natural resource, the Hudson River estuary.

Dated: New York, New York
December 10, 1973

Respectfully submitted

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2,600,000 actual Fish. Over three years this sum is 858,000 lbs. or 7,800,000 Fish. Taking only the striped bass as an example, a substantial number of fish will be lost, with greatest impact being when those fish mature and their numbers are not available for recreational fishing or spawning, added to this already significant loss are the cumulative entrainment losses for the three years. Assuming 100% mortality on entrainment with once through cooling base design, the mean predicted reduction of striped bass juveniles due to entrainment was between about 23% to 58% (Fig. XI-3, p.XI-34). Adding the cumulative impact of all plants other than Storm King the 100% mortality assumption on base design rises to about 43% to 74% (Fig. XI-4, p. XI-36).

Taking the mean predictions of mortality for base design with 100% mortality assumed at 43% of all striped bass juveniles (p.XI-32), the interim once-through cooling will reduce substantially the available striped bass stock. Adding all plants except Storm King this loss of juveniles results in a mean prediction of 62%, up 14%.

On balance, over half of the striped bass for at least a three year period would be lost. Since fish egg and larvae measurements are difficult to make, the estimate may in fact be much higher. The maturation period for striped bass is some four-six years; accordingly, at the end of the interim period the first adverse impact on commercial and