Harry G. Woodbu Executive Vice President

Regulatory

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January 25, 1974

ASEMIC ENERGY COMMISSION Rogulaisry Mail Section

File Cy

Mr. George W. Knighton, Chief Environmental Projects Branch No. 1 Directorate of Licensing U.S. Atomic Energy Commission Washington, D.C. 20545

Re: Indian Point 3 - Docket 50-286

Dear Mr. Knighton:

Con Edison submits herewith 3 signed copies and 37 additional copies of its Responses to Comments on the AEC Staff's Draft Environmental Statement for the Indian Point Nuclear Generating Plant Unit No. 3, issued October 1973.

We are submitting herewith Responses to Comments of the following:

U.S. Environmental Protection Agency, dated December 10, 1973

U.S. Department of the Interior, dated December 13, 1973



New York State Department of Environmental Conservation, dated December 17, 1973

Attorney General of the State of New York, dated December 17, 1973

Hudson River Fishermen's Association and Save-Our-Stripers, dated December 14, 1973

Federated Conservationists of Westchester County, dated December 7, 1973

We have reviewed and are submitting no responses to comments of the following because they are adequately covered by the responses listed above.



U.S. Coast Guard, dated December 3, 1973

U.S. Department of Health, Education and Welfare, dated November 30, 1973

U.S. Department of Agriculture, dated January 4, 1974

U.S. Federal Power Commission, dated December 13, 1973

Environmental Defense Fund, dated December 10, 1973

Rockland County Conservation Association, dated December 11, 1973

Great South Beach Mobile Sports Fishermen Mr. Donald McLean, dated November 30, 1973

Mr. John Nicholas, Jr., dated December 8, 1973

Mrs. Harold Cooper, dated December 14, 1973

North Brookhaven Sports Fishermen's Club, dated December 3, 1973

Mr. Dennis Zaccardi, dated December 15, 1973Mr. Robert J. Rance, dated December 9, 1973Mr. Kenneth E. Bay, dated December 7, 1973

West Branch Conservation Association, dated December 14, 1973

Connecticut Coastal Anglers Association

Sincerely,

Harry G. Woodbury Executive Vice President

Encs. cc: Dr. Richard Rush Comments of the New York State Department of Environmental Conservation

Response of Con Edison to

Con Edison submits the following response to the Comments of the New York State Department of Environmental Conservation (DEC) dated December 17, 1973 on the AEC Staff's Draft Environmental Statement for Indian Point 3:

1. <u>DEC Comment 1</u>. Con Edison respectfully submits that DEC has misinterpreted the Atomic Energy Commission's ruling in the Nine Mile Point case. The Commission said "The Licensing Board is directed to schedule a prehearing conference on the contentions regarding energy conservation alternatives earlier framed by intervenors." 73-11 RAI 995 (1973) Accordingly, the Commission held merely that the Licensing Board should not exclude evidence offered by the intervenors on the subject of energy conservation, which related to specified contentions. It did not order the Board to undertake a thorough consideration of the conservation of energy. Accordingly, it is not required that the FES contain a discussion of this subject.

2. <u>DEC Comment 2</u>. Underlying the DEC comment is the erroneous premise that, ". . . the wasteful disposal of heat which could be used for heating homes and businesses, used in the production of food, etc. At 837 MWe, Indian Point 3 rejects approximately 6.25×10^9 BTU/hr. at approximately 16°F above river ambient. At this temperature the heat has very little utility.

There is no current feasible use for such low grade energy. Transporting this heat to surrounding potential commercial and/or residential users would require huge expenditures of money for pumps, piping, and heat transfer areas and a tremendous amount of energy for transporting the heated water. The advantages of various thermodynamic processes to raise the temperature of the heat would be more than offset by the disadvantages of the high energy requirements and expenditures of economic resources. Thus, the heat rejected by Indian Point 3 could not be used to heat homes and businesses.

3. <u>DEC Comment 3</u>. The meteorological studies conducted at the site since the operation of Unit 1 were done to verify the original observations in 1956 on the predominant valley flow. In referring to "gaps in the data" the DEC fails to consider that there was no requirement that Con Edison continuously compile and evaluate meteorological diffusion parameters. However, as stated, a meteorological program is in progress for assessment of cooling tower effluent impact. 4. <u>DEC Comment 4</u>. An evaluation of the anticipated effects on the meteorology in the area resulting from the use of various cooling systems is contained in Appendix G to the DES. Reference should be made to the Indian Point Unit 1 Environmental Report and Benefit Cost Analysis June 1973 (Supplement 1, 8/73, Docket 50-3) for an updated document on the emissions from the superheater and package boilers.

5. <u>DEC Comment 5</u>. In regard to DEC's comment, which concerns thermal shock, several points should be made. First, in all the years of operation of Indian Point 1, thermal shock has never resulted in any discernible fishkill. Con Edison recognizes that this has been a problem at other plants with other outfall designs, but it has not been a problem at Indian Point. Second, once all three plants are operating, the potential for thermal shock will be minimized because severe thermal shock could only occur if all three plants shut down simultaneously.

Third, the high velocity submerged discharge assures rapid dilution so Con Edison does not anticipate that large areas of the river will be heated to a degree that could cause thermal shock. Finally, the Technical Specifications limit the rate of temperature change for planned shutdowns, and the planned rate is 7°F per hour in the discharge canal which will result in a rate of change in the river of less than 1°F per hour. An unplanned shutdown might stress the fish within the discharge canal, but these populations are insignificant in size relative to populations in the river.

6. <u>DEC Comment 6</u>. Con Edison stresses the significance of the current environmental study program. We emphasize that only a comprehensive on-site environmental study would yield reliable data for a meaningful and realistic assessment of the environmental impact of a closed-cycle cooling alternative. The Staff's preliminary evaluations of the alternative heat dissipation systems, especially on wet cooling towers, (pp. XI-17 to XI-25) are considered, at best, premature because the evaluations were not made on reliable, relevant field data.

7. <u>DEC Comment 7</u>. The operation of Indian Point 3 as presently designed is not expected to cause any significant change in the acoustical climate of the adjacent community. The Draft Environmental Statement did address this point in indicating that most noise will be attenuated by the building walls of the plant and absorbed by the forested topography. (V-3) With respect to DEC's statement regarding a comparison of predicted plant levels with existing ambient levels, Con Edison's position is that no such comparison is necessary for the plant as designed. Con Edison is studying cooling tower noise to determine the anticipated impact on the adjacent community.

8. DEC Comment 8. No comment.

9. <u>DEC Comments 9 and 14</u>. The information sought by the DEC through these comments is contained in the DES at pages V-2 and XI-56, section (8)(a). The visitor center is scheduled for completion during August 1974. The 80-acre area is primarily covered with second generation forest and is available and unused. Based on the September 10, 1973 ASLB Initial Decision however, access might not be possible until sometime after May 1, 1978, if at all.

10. <u>DEC Comment 10</u>. Con Edison disagrees with DEC 3 comment as Cornwall is irrelevant to this proceeding as it will not become operational until after Indian Point 3 has commenced operation. Alternatively, even if Cornwall is viewed as relevant to this proceeding, the AEC must accept the findings of the Federal Power Commission on its potential environmental impact, rather than conduct its own independent analysis, as the Federal Power Commission is the lead agency on the licensing of Cornwall. It would be senseless for the AEC to attempt to duplicate the 10year history of vigorously contested public hearings on Cornwall that were conducted by the Federal Power Commission.

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11. DEC Comment 11. No comment.

12. DEC Comment 12. No comment.

13. DEC Comment 13. No comment.

14. DEC Comment 14. See response to DEC Comment 9.

15. DEC Comment 15. No comment.

16. <u>DEC Comment 16</u>. Since the design and start of construction of Indian Point No. 3 dates back to the mid-1960's the geological and seismological studies used for plant siting naturally had to precede these events. In fact, since Unit No. 3 shares the same sites as Unit No. 1 and Unit No. 2, the data used for the siting of those plants was considered applicable for Unit No. 3 (hence the submittal of the Fluhr and Paige reports).

However, in more recent investigations (1968) related to proposed nuclear facilities at Verplanck (application withdrawn for reasons other than geologic or seismic) further studies were undertaken of local seismology which are applicable to the Indian Point site. These studies confirm the design basis of the Indian Point facilities as appropriate. Data available after these more recent investigations do not, to our knowledge, indicate a need to change the design of Indian Point structures.

The statement that the Fluhr and Paige reports are in conflict with the FSAR and the Environmental Statement with regard to rock strength, grouting and local changes in rock formation, is simply not true.

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Both Fluhr and Paige indicate the rock is quite strong and is very suitable for foundation purposes. Fluhr states that the rock is good for 50 tons/sq. ft. while the design load was only 25 tons/sq.ft. Whenever the need for pressure grouting was discussed in the reports, it was <u>not</u> mentioned for the purpose of improving the load capacity of the rock but to seal off the ground water from any contaminants that might be released from the plant. Since the design of the plant prevents such a release and all ground water in the immediate area of the plant runs to the Hudson River and would not contaminate any local wells, the pressure grouting was not done.

17. <u>DEC Comment 17</u>. The sentence change requested by the State would be proper if the change adopted causes the sentence to read in part "the three Reactor Containment Buildings are built on hard grey . . limestone" rather than saying "all structures are built on rock" since several of the structures are built on caissons (the Waste Hold Up Tank Pit & the east side of the PAB).

Fluhr in his report indicates the rock is capable

of supporting foundation loads of 50 tons/sq.ft. The design loading used by UE&C was 25 tons/sq.ft.

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Further information on the capacity of the foundation bedrock is found in the Answer to Question 2.6 in Supplement 2 of the Indian Point No. 3 PSAR which states "the compressive stress of 118 test cylinders taken from the bedrock on site resulted in an average of 5250 psi with approximately 90% of the tests falling in the range 2100 to 9900 psi."

18. <u>DEC Comment 18</u>. It is felt that the DEC's approach in this comment would be more applicable to a review of a Safety Analysis Report rather than an Environmental Impact Statement. The response to Comment No. 16 applies equally well to this comment.

19. DEC Comment 19. No comment.

20. DEC Comment 20. No comment.

21. <u>DEC Comment 21</u>. It is unnecessary to include such specific and detailed data. There are likely many local background radiation variances and specific ones noted at any future time may be erroneously attributed to Indian Point operations.

22. DEC Comment 22. No comment.

23. DEC Comment 23. No comment.

24. <u>DEC Comment 24</u>. There are 6 main cooling water pumps and 6 service water pumps installed at Unit No. 3. Cooling water pumps are one speed but have a by-pass system which diverts up to 40% of the flow from the pressure to the suction side of each pump to reduce the flow through the intake screens.

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25. <u>DEC Comment 25</u>. The DES should only consider transmission lines from the plant to the Buchanan substation. See Regulatory Guide 4.2, § 3.9.

26. DEC Comment 26. No comment.

27. DEC Comment 27. There are 6 service water pumps and thus pumps are always available when necessary.

28. <u>DEC Comment 28</u>. The traveling screens will be rotated intermittently at least once a day or whenever necessary. They will be used in essentially a'l weather conditions. They will not be subject to icing conditions due to the availability of an air curtain and de-icing flow in the winter time. There is not expected to be any delay time before operation due to ice buildup on the screens or drive mechanism. 29. <u>DEC Comment 29</u>. The multiple gates of the outfall structure act as a submerged orifice. The pressure head upstream of the discharge structure determines the discharge velocity. A given head of water (above river level) determines a unique velocity. The general formulation is:

$$= C_{v} \sqrt{2g_{\Delta}h}$$

Where:

V.

V = velocity at vena contracta g = acceleration of gravity (ft/sec²) Ah = height differential between water in canal and river level C_v = coefficient

For ideal flow with total energy recovery $C_v = 1.0$. Alden Hydraulic Labs., performing studies for Con Edison on the Indian Point physical model, evaluated the coefficienc, C_v , to be about 0.95.⁽¹⁾

The relationship therefore becomes:

 $V = 0.95 \sqrt{2g_Ah}$

and for V = 10 ft/sec, $\Delta h \simeq 1.7$ feet.

There are level indicators on the outfall structure, so the gates can be adjusted to attain the requisite height for the desired discharge velocity. Note that with 3 unit operation,

(1) I.P. 3 E.R., Appendix N, "Indian Point Unit No. 2 Cooling Water Studies," Alden Research Laboratories, May 1969.

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the flow rate is (service and circulating) 2.058 x 10^6 gpm, or for a ten ft/sec. discharge velocity, the area required is about 46 ft²/gate, or about 3/4 of the full gate opening (4' x 15').

Con Edison plans to verify the value of C_v during the course of its thermal survey, for I.P. 2. If a revised value of C_v is obtained, this updated value will be employed in the equation for subsequent gate settings.

30. <u>DEC Comment 30</u>. Con Edison will install an air bubbler system in front of the Unit No. 3 intakes. Preliminary analysis indicates that the air bubler system has been generally effective in reducing impingement.

31. <u>DEC Comment 31</u>. DEC correctly notes the potential aesthetic problems of alternative cooling systems, especially the hyperbolic structure of natural-draft cooling towers.

32. <u>DEC Comment 32</u>. Once construction is completed, use of the outdoor loudspeaker system will be minimized.

33. <u>DEC Comment 33</u>. The ozone topic is discussed on pages V-6 and V-7. There are no problems of induced electricity

to structures in the vicinity of Unit 3 EHV transmission lines. The transmission line rights-of-way are designed with this problem in mind and sufficient distances are maintained so that this problem does not occur.

34. <u>DEC Comment 34</u>. Refer to answer on DEC Comment No. 4.

35. <u>DEC Comment 35</u>. Refer to answer on DEC Comment No. 4.

36. DEC Comment 36. No comment.

37. DEC Comment 37. No comment.

38. <u>DEC Comment 38</u>. At the front of the intake structure of Unit No. 3, unlike Unit No. 2, there are travelling screens constructed of the same size fine mesh (3/8 inch) as the fixed screens at the Unit 1 and 2 intakes. See Section 9.1 (p. 9-2) of the Environmental Report for Indian Point 3. Travelling screens provide additional flexibility beyond fixed screens in terms of screen cleaning capability and represent an improvement over the earlier IP-2 design. This flexibility is an advantage for such a system, and eliminates the need for the fixed screens.

39. DEC Comment 39. Con Edison agrees that further studies of impingement should be carried out. Con Edison is

planning a flume study in which fish will be exposed to controlled conditions of water velocity in order to study their behavior in relation to fish protection devices. Also being studied is the relationship of impingement to ambient temperature, recirculation temperatures, if any, salinity, dissolved oxygen, pH, intake volumes and velocities, and the presence of air curtains.

40. DEC Comment 40. No comment.

41. <u>DEC Comment 41</u>. Con Edison has conducted studies on the effect of plant operation on D.O. and has found that D.O. reduction in the Indian Point Unit 1 and 2 cooling water system (in plant losses) will be less than 0.2 mg/l under summer conditions; intake D.O. of 6.5 mg/l at a river temperature of $79^{\circ}F$.⁽¹⁾ Three unit operation is analyzed in the I... 3 E.R.⁽²⁾, showing the inplant D.O. losses, analyzed at a D.O. level of 7.2 mg/l with a river temperature of 75°F, to be also approximately 0.2 mg/l. It should be noted that the absolute value of inplant D.O. losses decreased as ambient D.O. levels decreased. This inplant loss is less than the mean D.O. differential found between surface water and bottom water during Con Edison's Hudson River Ecology Study⁽³⁾.

(1) Redirect-Rebuttal testimony of John P. Lawler, Ph.D., Quirk, Lawler & Matusky Engineers on the Effect of Indian Foint Units 1 and 2 Operation on Hudson River Dissolved Oxygen Concentrations, Docket No. 50-247, Feb. 5, 1973.

- (2) Appendix FF, Question IV.C.13, P. IV-44.
- (3) Hudson River Ecology Study in the area of Indian Point First Annual Report, 1973.

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Con Edison has also analyzed the effect of inplant loss of D.O. on bulk river D.O. levels, and found that the aforementioned inplant reduction in D.O. (0.2 mg/l) will produce a bulk river change of less than 0.03 mg/l⁽¹⁾.

Therefore, while the ambient D.O. levels may approach the levels stated by the DEC, the effect of I.P. on these levels is negligible.

42. <u>DEC Comment 42</u>. The revised Table V-2 (revised by Con Edison in comments on the DES) describes chromium discharges and concentration. Also, we refer the AEC to the "Plan of Action" dated Jan. 1, 1974 which describes the possible use of a biodegradable corrosion inhibitor to replace chromate in certain closed cooling water systems at Indian Point Station.

43. <u>DEC Comment 43</u>. The predetermined value requested by DEC has not yet been established.

44. DEC Comment 44. No comment.

45. <u>DEC Comment 45</u>. Liquid waste from the condensate tank and from blowdown are mixed and diluted with service water in the Service Water Return Line prior to flowing into the discharge canal.

46. DEC Comment 46. Greases and oils which inadvertently

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enter the discharge canal are prevented from reaching the confluence with the river by means of an oil slick boom located in the discharge canal.

47. DEC Comment 47. No comment.

48. <u>DEC Comment 48</u>. There are casks designed, built and licensed for shipping by truck to accommodate 3 spent fuel assemblies from PWR of the current generation. We have received proposals to furnish such services. Therefore, we believe the Staff statement of 57 truck loads per year from all three units, based on three fuel assemblies per cask and one cask per truck load, is justified.

49. DEC Comment 49. No comment.

50. DEC Comment 50. No comment.

51. <u>DEC Comment 51</u>. The details of the training program are not a proper subject for inclusion in an Environmental Statement.

52. <u>DEC Comment 52</u>. Mechanical cleaning of condensers could be employed at Indian Point if installation of such a system were warranted by its environmental benefits. The effect of infrequent chlorination at Indian Point is not considered significant in terms of impact on overall river biota. As the sewage load imposed on the river by municipalities decreases with the completion of treatment plants, the need for chlorination can be expected to be further reduced. To further reduce any impacts Con Edison will carry out a program within the first year of plant operation (Unit No. 2) to determine the lowest levels of chlorine residuals possible consistent with proper functioning of the plant's cooling system.

53. DEC Comment 53. No comment.

54. DEC Comment 54. No comment.

55. <u>DEC Comment 55</u>. Two years of postoperational data will be sufficient to determine whether plant impact will be as great as the AEC predicts. Any long-term effects of lesser magnitude can be detected by long-term monitoring at a much reduced effort.

> 56. <u>DEC Comment 56</u>. See response to DEC Comment 1. 57. DEC Comment <u>57</u>. No comment.

58. DEC Comment 58. No comment.

59. <u>DEC Comment 59</u>. From a licensing point of view, the subject of alternative cooling systems for Indian Point 3 is the contested issue. A separate proceeding is considering Unit No. 1. We note that Unit No. 1 has been operating for almost 12 years with no discernible significant environmental impact ascribed to its operation. Finally, it is desirable to have the Unit No. 1 flow available for any discharge dilution requirements.

60. DEC Comment 60. No comment.

61. <u>DEC Comment 61</u>. Con Edison concurs with the view that the Staff has overlooked these problems, and believes that the decision on cooling towers cannot be properly made until completion of these studies, which are now in progress.

62. DEC Comment 62. No comment.

63. <u>DEC Comment 63</u>. The DEC concurrence with the Staff's hatchery assessment is in error. See Con Edison's comments on the DES for detailed criticism of the errors in the Staff's hatchery analysis. (See Comment 245, p. 59 of Applicant's Comments on DES.)

64. DEC Comment 64. No comment.

65. <u>DEC Comment 65</u>. The 15% outage rate for Indian Point 3 was used to agree with projections for long-term mature outage rates on large nuclear units being used for study purposes by the New York Power Pool and other industry groups.

Experience with Indian Point 2 is irrelevant

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because it has only been in service since August 15, 1973 (5 months), at only 350 MW. The unit is not mature and was expected to encounter normal start-up experiences.

Indian Point 1 at best provides only a poor basis on which to predict an outage rate for Indian Point 3. The design of Indian Point 1 was essentially a prototype and is almost twelve years old, while Unit No. 3 is a modern unit not yet in service. And finally, Unit No. 3 is a "nuclear only" unit while only a portion of Unit No. 1 capacity is nuclear. The remainder is from an oil-fired superheater, which furnishes an additional cause of plant outages.

66. DEC Comment 66. No comment.

67. DEC Comment 67. No comment.

Response of Con Edison to Comments of Hudson River Fishermen's Association

and Save-Our-Stripers

Con Edison submits the following response to the comments of the Hudson River Fishermen's Association and Save-Our-Stripers dated December 10, 1973 and forwarded to the AEC by letter of Nicholas A. Robinson, Esq., dated December 14, 1973:

1. The "Preliminary Statement" merely restates the basic position of HRFA and SOS on the issues in the Indian Point 3 proceeding, and Con Edison's opposition thereto is well known and is set forth in its comments dated December 24, 1973, on the DES and in the responses herein.

2. The statements on page I-1 ignore the substantial progress Con Edison has made in reducing fish impingement. The amount of impingement is substantially reduced from the early days of operation of Indian Point 1 when mature fish were killed in the forebay.

3. There is no biological reason why impingement must be completely eliminated. The requirements of law, biological significance and common sense are that impingement should be reduced to as low a level as can be justified by a benefit-cost analysis. 4. The comment on the air bubble screen indicates HRFA's and SOS' refusal to consider anything other than closedcycle cooling. Con Edison's air bubbler system is substantially different from those described in the referenced reports, and preliminary results indicate that it may well reduce impingement from 10 to 50% or more. When Indian Point 2 was operating between May 15 and October 31, 1973, the number of fish collected from the screens was 45,713 (48,066 if adjusted to 6-pump operation for the full period) compared to Con Edison's previous estimate for this period based on prior data without the air bubbler system of 221,962.

5. Any attempt to estimate environmental impact from impingement, as suggested on page I-2, prior to the completion of Con Edison's ecological study program is speculation of the type the AEC Staff has consistently rejected when offered on behalf of Con Edison.

6. Con Edison submitted the plan for reducing impingement on January 1, 1974, as required by the terms of the operating license for Indian Point 2.

7. The discussion on page II-1 misstates the DES. While the AEC Staff was careful to state that they were describing potential or possible effects, these qualifications are omitted by HRFA and SOS who state categorically that these effects will occur.

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8. Many of the alleged impacts described on page II-2 have not been evaluated by HRFA, SOS or the AEC Staff to indicate their significance on the ecosystem of the Hudson River. For example, the mere fact that a reduction in dissolved oxygen may occur does not require mitigation unless that reduction is related to a significant adverse impact on the ecosystem. Such relationship has not been established. The potential reduction in striped bass population has been based on the assumption that no compensatory mechanisms exist, which is contrary to all known principles of ecology.

9. HRFA and SOS state their desire to have the AEC review the environmental impact of Cornwall* on pages II-2 to II-4. This is not surprising since HRFA has been a party to the extensive litigation on this project before the Federal Power Commission, and has not prevailed in that proceeding. Their purpose in bringing consideration of Cornwall into this proceeding is abundantly clear when viewed in light of the statement of Mr. Alexander Saunders, Chairman of Scenic Hudson Preservation Conference, as quoted in <u>The Sunday Record</u> of Bergen County, New Jersey, December 2, 1973, with respect to the Cornwall proceeding, "Our strategy has always been one of endless delay." Operations of the Cornwall plant are irrelevant

* HRFA and other opponents of this project attempt to rename it "Storm King" for public relations purposes.

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to consideration of the environmental impact of Indian Point 3. since Cornwall is scheduled to commence operations after completion of Indian Point 3. If the AEC Staff is to take Cornwall into account, it must take its environmental impact as found by the FPC as the lead agency for federal environmental review of In that connection, it should be noted that the FPC Cornwall. license contains conditions to assure protection of the fishery resources of the Hudson River and has reserved jurisdiction to require any needed modifications of the fish protective facilities as may be ordered by the Commission, after notice and opportunity for hearing. And finally it should be noted that the letter of Chairman Dixie Lee Cay to Senator Abraham Ribicoff dated December 5, 1973, forwarding the ORNL prelimina - analysis to Senator Ribicoff, stated, "I urge you to use caution in drawing conclusions based on this preliminary analysis and strongly suggest that the apparent impact drawn from this preliminary data may be different from the real one."

10. Con Edison would welcome an independent and detailed analysis of the actual construction time required for a natural draft cooling tower system by experienced, competent construction experts based on conditions at the Indian Point site using Westchester labor. Discussion of average construction times at other sites with other designs and local conditions and with other construction labor are irrelevant and misleading.

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11. Cessation of operations during the spawning season, suggested on page IV-1, should not be required unless the public benefits to the fishery exceed the public costs in terms of money and oil consumption. Even assuming the worst predictions of the AEC Staff are true, cessation of operations cannot be justified on this basis. It is suggested in the Preliminary Statement that power losses can be compensated for by energy conservation and alternative sources of power. While the public has responded well to energy conservation required by the present fuel shortage, it is doubtful whether this response would be possible to prevent a potential and highly theoretical threat to aquatic re-The availability of alternative sources of power sources. will depend in large part on the installation of new generating units in the Northeast which in turn are subject to construction delays, litigation and the willingness of other utilities to utilize their diminishing fossil fuel resources to reduce a potential threat to the Hudson River biota.

12. The alleged cost-benefit evaluation (pp. V-1 to V-8) is highly conjectural and lacking in documentation and explanation of computational procedures. We will point out only a few of the more obvious errors in paragraphs 13-25 below. 13. Con Edison's impingement estimates are not "minimal". They were based on analysis of the most recent accurate data with no allowances for the improvements discussed above which have been observed since then.

14. Assuming the worst, HRFA and SOS predict diminution of fishing for a three-year period (p. V-2). There is no attempt to place a specific dollar value on this temporary diminution that would justify the interim procedures, requested.

15. The statement is made that there has been a significant reduction in catch in recent years. (P. V-3) This reduction can only be documented for the commercial catch and is most likely caused by a decline in fishing effort because of reduced consumption of fish. No reliable data exist to document a decline in the catch of sports fishermen.

16. The analysis implies that fishermen will stop fishing because of a reduction in striped bass. This ignores the presence of other fish in the ocean. Although a fisherman may prefer striped bass, it is probable that faced with a reduction in striped bass he would go after other fishes.

17. The monetary computations (pp. V-4 to V-5) are based on indirect costs. The indirect benefits of electricity were not taken into account on the benefit side. Also, this

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highly conjectural approach ignores the existence of accepted federal procedures for the préparation of benefit-cost ratios involving federal funds for water-related projects.

18. It is not shown how the computation goes from \$28,800,000 on page V-4 to \$80,000,000 on page V-5.

19. The statement that a 50% reduction in available fish would cut into the ability of the fish to regenerate its numbers is entirely without foundation and contrary to known experiences where fish have recovered after much greater reductions and where fisheries have been started from scratch as in the case of the eastern striped bass placed in the San Joaquin system in California.

20. Economic multipliers (p. V-5) have not ween used in any of the cost-benefit analyses of the Staff and Con Edison. It is therefore not appropriate to add them here.

21. The fact that the per capita consumption of electricity in Con Edison's service territory is below the national average, as reported by the Regional Plan Association, is completely irrelevant. The question is whether Con Edison has sufficient generating capacity to supply the demands that will exist with a large enough reserve to assure reliable service. 22. The quote on transmission import capacity (pp. V-6 to V-7) is a perfect example of distortion by out of context quotation. The DES goes on to state "However, it is the Staff's opinion that such bulk quantities of power will not be available for firm purchase agreements from existing sources within or outside the New York Power Pool." (P. XI-2) The improved transmission facilities are required for emergency transfers which may be required because of temporary outages, but long-term replacement of Indian Point 3 requires the existence of firm capacity elsewhere and such capacity does not exist. Also, even if firm purchases could be arranged, such energy is generally not available in the event of an emergency on the seller'system. This subject is adequately discussed in the DES.

23. It would be a perversion of present energy conservation procedures to consider them a substitute for Indian Point 3. The purpose of the current energy conservation effort is to preserve scarce fuel oil supplies. In his speech to the nation on the fuel oil crisis, President Nixon stated that dependence on foreign oil would be a continuing matter of national concern and recommended a program which includes maximization of nuclear energy sources. A discussion of this subject would, therefore, only result in the conclusion that generation from Indian Point 3 must be maximized.

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24. The New York City Report referred to on page V-7 is irrelevant to this proceeding. It discusses a peaking power alternative to a peaking plant. Indian Point 3, on the other hand, is a base load plant. Furthermore, the City's proposal was basically a "packaged plant" which was discussed in the DES. (Pp. XI-10 to XI-12) Con Edison agrees with the Staff's conclusion: "The staff, therefore, does not consider installation of packaged plants as being a viable alternate to Indian Point Unit No. 3."

25. The concept that Con Edison does not need additional capacity as long as its predicted peak load is within total system capacity (p. V-8) is seriously in error. If this were the best of all possible worlds, equipment would function at 100% capacity at 100% of the time and never wear out. But since this is not the best of all possible worlds,* equipment needs repairs and maintenance and it is fundamental to a reliable electric system that an adequate reserve exist for this purpose. HRFA's extensive participation in the Indian Point 2 proceeding should have made them fully aware of this point.

* Voltaire, Candide, (1759)

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Response of Con Edison to

Comments of the U.S. Department of the Interior

Con Edison submits the following response to the Comments of the U. S. Department of the Interior dated December 13, 1973 on the AEC Staff's Draft Environmental Statement for Indian Point 3:

 The Interior Department has misunderstood the DES when it says that the DES described the environmental effects "which are expected to occur as a result of this project."
(p. 1) The DES described potential environmental effects but never stated what in fact was expected to occur with any statistical confidence levels on the predictions.

2. There is no evidence to support the statement that effects of short-term operation "could be devastating". (p. 2) All expert testimony to date is directly contrary. Also a contrary view has been supported by the Hudson River Policy Committee which is furnishing surveillance of the research study program, and on which the Department of the Interior has a representative. A representative of this Department is also on-site to assure proper implementation of the recommendations of the Policy Committee.

3. There is no possibility of operation of a closedcycle cooling system at any date earlier than that specified by the AEC Staff, and Con Edison has considerable doubt as to whether that date can be met. (p. 2)

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4. In the Indian Point 2 proceeding, extensive consideration was given to requiring limited operation of the plant pending completion of the closed-cycle cooling system and it was concluded that such limited operation was not justified by the record. (p. 2) The similar conclusion with respect to Indian Point 3 contained in the DES is amply supported by the facts. The Bowline Point Agreement referred to by the Department is a consent decree entered into to settle an action brought by the Hudson River Fishermen's Association and others, and restricts operations only during 1974. The Agreement was not based on any finding of environmental damage from plant operations.

5. Any attempt to describe the facilities indicated by the Department (p. 2) would involve the Staff in idle speculation, as most of these facilities are in the conceptual phase.

6. It is not clear whether in the discussion of effects on historical landmarks the Department considered the effects of natural draft cooling towers. The AEC Staff did not include any such consideration in the DES and a similar omission appears to exist here. (p. 3-4)

7. To say that effects on species other than striped bass "are equally as important" (p. 4) is to ignore the costbenefit approach which is supposed to be fundamental to decision making in this area. If there were no serious impacts on striped bass but a serious adverse impact on alewives, does the Department of the Interior maintain that the people of New York should pay the economic and environmental costs of cooling towers to protect alewives?

8. The problems of solid radioactive wastes are best considered on a generic basis for all power plants rather than in individual licensing proceedings (p. 6), and this has been the approach of the AEC.

9. The Department has apparently been misinformed as to the significance of the recent bulging of the steel liner for the containment of Indian Point 2. (p. 6) This incident did not involve a threat to public health and safety. Several tests were performed to insure containment integrity after the incident. These tests included a special leakage test of the containment liner integrity at full postulated accident pressure and magnetic particle examination of the entire bulge area prior to, during, and subsequent to the pressure leak test. Other measurements were also made including videotaping of the liner performance during the leak test. All tests demonstrated that the liner, including the bulge section, performed as analyzed, that, at no time prior to, during or after the test was the integrity of the liner violated and that the liner is well within its original design capabilities to withstand the effects of a design basis LOCA and to contain the radioactivity which might be released to containment from such an accident. This occurrence certainly has no relationship whatever to a Class 9 accident.

The Department has requested an economic evaluation 10. of the impact of impingement in accordance with a publication of the American Fishery Society (p. 7). We attach such an evaluation as Exhibit A. This shows that the estimate for impingement for all three plants is a cost of \$401,845.08 per year. This compares with a presently estimated cost of cooling towers for Units Nos. 2 and 3 of not less than \$38,000,000 per year. However, it is important to note that NEPA calls for a report on projects "significantly affecting the quality of the human environment . . . ". (NEPA, Sec. 102) Accordingly, it is necessary to look at social costs as they affect the human environment. Unless losses of fish are related to impacts on total fish populations which reduce the number of fisherman days for recreation or reduce the commercial fishing, no adverse impact on the human environment is established. The assumption that every fish impinged reduces the sport or commercial fishery is contrary to known principles of the dynamics of fish populations.

Monetary Value of Impingement

EXHIBIT A

In their comments on the Draft Environmental Statement for Indian Point Unit 3, the Department of the Interior suggested that monetary values of fish developed by the Southern Division of the American Fisheries Society be applied to the estimated impingement losses in order to quantify this aspect of the economic impact of the plant. Following is a preliminary analysis using these monetary values.

The percentage composition of impinged fish is obtained from IP-2 Testimony of Ronald A. Alevras on "The Estimation of Fish Impingement at Indian Point Units 1 and 2, February 5, 1973, Table 7, page 16. The percentage composition presented in that document is based on collections made at Unit 1 and will be applied to Units 2 and 3, for this analysis. Likewise, the numbers (scaled up on a basis of flow rate for Units 2 and 3) and size of each species is based on collections at Unit 1.

For the purpose of this analysis the following assumptions are made:

- Because monetary values are based on 1 in. length intervals and the data in Alevras 1973 is presented on the average weight of fish, a mean length of 3 in. will be used. The vast majority of fish collected at Unit 1 were within a 2 to 4 in. length range.
- 2) Tomcod (<u>Microgadus tomcod</u>) is not listed in "Monetary Values of Fish," 1970, The Pollution Committee, Southern Division, American Fisheries Society, therefore, a value of \$0.10 is applied.
- 3) For the "Other" category (2.9% of total collections) which contains both game and non-game fish species, a value of \$0.10 is applied.

Table 1 summarizes the monetary value of fish lost through impingement for Unit 3 above and Units 1, 2 and 3 combined.

The estimated monetary values presented in Table 1 are subject to the limitations presented in the testimony of Alevras, 1973 because the numerical estimates used are the same, with the exception of an adjustment for refueling outages which is not made in Table 1. If an adjustment were made for refueling, the monetary values would be reduced by about 10%. The numerical estimates may be high based on recent collections at Unit 2. The lower than predicted impingement of Unit 2 may be attributable in part to the presence of an air curtain which was not factored into this estimate.

<u>Species</u>	Estimate <u>Unit 1</u>	d Annual Collection <u>Unit 2</u> <u>Unit 3</u>	Value of a 3 in. Individual of Each Species ¹ (cents)	Value of Fish Collected at Unit 3	Value of Fish Collected at Units 1, 2 & 3 combined
White perch	263,614	790,842 790,842	.15	118 626 30	276 794 70
Striped bass	11,559	34,676 34,676	75	26 007 00	60 692 25
Atlantic tomcod	30,984	92,843 92,843	-10 ²	9 284 30	00,083.25
Herrings	47,726	143.179 143.179	10	14 317 90	21,887.00
(blueback & alewife)				14,317.90	33,408.40
Bay Anchovy	8,203	24,609 24,609	-033	730 27	1 700 60
Other	10,813	32,439 32,439	•10 ⁴	3,243.90	7,569.10

Table 1 - Estimated Monetary Value of Fish Impinged at Indian Point

Total

\$172,217.67

\$401,845.08

- Values from "Monetary Values of Fish", 1970, The Pollution Committee, Southern Division, American Fisheries Society.
- 2. Assumed value, not available in "Monetary Value of Fish".
- 3. Based on value per fish.
- 4. Assumed value.

Response of Con Edison to

Comments of Federated Conservationists of Westchester County, Inc.

Con Edison submits the following response to the Comments of the Federated Conservationists of Westchester County, Inc. dated December 7, 1973 on the AEC Staff's Draft Environmental Statement for Indian Point 3:

The Federated Conservationists appear to be unaware of the fact that Con Edison has used independent outside consultants extensively in working on its environmental problems. Dr. Gerald J. Lauer of New York University Institute of Environmental Medicine, Dr. Edward C. Raney of Ichthyological Associates, formerly professor of Cornell University, and Dr. James T. McFadden, Dean of The University of Michigan School of Natural "esources, have been principal consultants and are three of the outstanding men in their fields. In addition, Con Edison has secured the services of a Fish Advisory Board consisting of leading scientists in this country and in England. Finally, the entire research effort is performed under the surveillance of the Hudson River Policy Committee made up of representatives of federal and state environmental agencies, not selected by Con Edison. This Policy Committee has an on-site representative who is an employee of the Bureau of Sports Fisheries and Wildlife of the Department of the Interior.

Response of Con Edison Comments of the Environmental Protection Agency

Con Edison submits the following response to the comments of the Environmental Protection Agency (EPA) dated December 10, 1973 on the AEC Staff's Draft Environmental Statement for Indian Point 3:

1. The conclusory phrasing of the EPA's comments implies that EPA has done an independent investigation of the items contained in its comments. Unless the Agency has developed significant evidence beyond that presented by the AEC in the DES, such comments are misleading. The Agency should clearly indicate the bases for its conclusions and the data and analyses upon which it relies.

2. The EPA is concerned about possible doses from the cow-milk-child pathway being in excess of applicable guidelines (Cover Letter, Paragraph 2; Conclusion, Item 1; pp. 3-4). Although both EPA and AEC have calculated under the conservative assumptions of Guide 1.42, that the maximum expected individual thyroid dose will not exceed guideline values, and will constitute but a small fraction of the allowable exposure under the applicable regulations (10 CFR Part 20), the EPA apparently believes that even more conservatism is required, and calls for identification of "potential" pastures. Con Edison has identified the location of the nearest milk cow as explained in the DES on Page V 136. Estimates of the thyroid dose via the cow-milk-child chain were made in the DES and are within the proposed Appendix I and Regulatory Guide 1.42 guidelines. Regulatory Guide 1.42 calls for the conservative evaluation of possible thyroid doses via the milk pathway from cows in currently existing pastures, for a plant in the operating license review stage like Indian Point Unit No. 3.

-2.

It is extremely unlikely that additional land will be converted to dairy pasture use in the vicinity of Indian Point. The trend in this part of the country is defi...tely away from rural and toward suburban land usage because of the proximity of the metropolitan area, the pressures of land availability, and consideration of the most economic usage of remaining available land.

There is considerable conservatism already in the calculations of Guide 1.42. The assumption is made that a child will have all his milk supplied by a cow grazing in the areas of highest potential concentration. No consideration is given to the pooling of milk in bottling plants or other technological factors. Con Edison believes that the probability of a child in the Indian Point area continuously getting all or most of his milk, fresh, from a single cow or small dairy herd is very small. When combined with the probability that this cow or herd will be located in the area of highest radioiodine fallout levels, and in an area that is currently not used as pasture land, the probability is so small as to be negligible.

3. Referring to exposures to radioiodine, the EPA states [p. 4] "the analytical sensitivity of the environmental sampling program should be developed to be capable of detecting the exposure levels given in Regulatory Guide 1.42." It is unclear whether this refers to the development of a monitoring program within the state-of-the-art, c_{-} to a research program undertaken to develop methods that are beyond the capabilities of existing systems.

4. The EPA states that the "present once-through cooling system will not enable the Indian Point Unit 3 to operate in compliance with applicable water quality standards for the State of New York . . ." (Letter, Paragraph 3, Conclusion, Item 2; p. 6; p. 12).

The EPA, in its comments on the effect of the thermal discharge from I.P. 3, as presented in the DES, appears to accept the thermal plume predictions postulated by the AEC without considering Con Edison's comments on the Staff's

model, [additional testimony of John P. Lawler, Ph.D., Quirk, Lawler & Matusky, Engineers on the Cumulative Effects of Bowline, Roseton and Indian Point Generating Station on the Hudson River, March 30, 1973 (Indian Point Unit 2 proceeding)], the Department of Interior's comments on the extreme difficulty of modeling these phenomena which makes such analyses "open to doubt and manipulation" [Letter D.I. to D. Muller, AEC, May 10, 1973], or even the Staff's own reservations about their predictions. The Staff saw fit to qualify their results [P. V-11, DEC]. "In assessing the results of the thermal discharge studies, it should be emphasized that the estimate are strong functions of the values of the input parameters, which are largely based on judgement and need verification by more field data than are now available, " [see also P. A-26, DEC].

Furthermore, Con Edison has performed mathematical analyses which refute the Staff's analyses. Appendix DD(1) of the I.P. 3 E.R. [Quirk, Lawler & Matusky Engineers, "Effect of Three Unit Operation at Indian Point on Hudson River Temperature Distribution"] presents in detail the results summarized in Section 9.3 of the E.R. These results do not show, as EPA claims, that "under severe operating conditions the entire surface width will experience tempera-

ture rises greater than 2.2°C (4°F)," but that maximum

thermal severity at Indian Point is found to be marginal, but not to contravene the New York State Thermal Criteria.

Con Edison recognizes that field studies are necessary both to evaluate the predictions of the various models and to establish proper values for the hydrological and meteorlogical parameters. Realistic predictions can be made if reasonable estimates of these input parameters for the analytical models are utilized. However, the values selected by the Staff for the heat transfer coefficient and thermal stratification factor, for example, and used in their analytic model, do not reflect the known body of knowledge about the Hudson.

During full power operation of Unit 2. Con Edison will undertake a field program to quantify the values of the hydrodynamic and meteorological parameters used in the mathematical model, assessing, and, if necessary, modifying, the predictions of the models, and evaluating the compliance of the Indian Points Units 1 and 2 with the State thermal criteria. A detailed description of this survey program is presented in "A Plan of Action for Operating Procedures and Design of the Once Through Cooling System for Indian Point Unit No. 2." [Submitted in Accordance with Section E. (3) of Facility Operating License No. DPR-26, as Amended by Amendment No. 4, dated September 28, 1973," January 1,

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1974. Docket No. 50-247, pp. 3-4.]

The AEC Staff's reservations, quoted by the EPA, as to whether the surface temperature requirements of the state's criteria will be met by Unit 3, are based on a faulty assumption about the operation of the discharge canal. The leaks in the canal that precluded the maintenance of 10 fps discharge velocity (only at very low flows) have been repaired.

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The EPA's statement that a reduction in flow will "aggrevate the already unacceptable thermal discharge effects" is incorrect; reduced flow (which occurs only in winter time, when the 90°F criterion would not be even remotely approached) does not change the quantity of heat discharged to the river, and therefore does not change the prediction of the area average temperature distribution along the river, although the near field temperature distribution at the place of discharge would change.

5. EPA comments refer to changes dissolved oxygen content in the Conclusion, Item 2, and on pages 10-11.

The connotation from these comments on dissolved oxygen is that there is a serious D.O. probelm resulting from plant operation. There is no basis for such a conclusion. Considerable data obtained from tests have shown that there is no appreciable reduction ($\langle 0.2ppm \rangle$) of D.O. as a result of plart operations. The fact that the Hudson River drops below desirable D.O. levels for other reasons is not germane. The impact of the plant is imperceptable in light of natural river D.O. fluctuations.

6. EPA comments refer to chlorination on page 11. With regard to chlorine discharges, it appears that the EPA has a misconception on chlorination techniques. Combined operations of Units 1-3 do not in any way result in combined chlorine discharges. The units are not chlorinated simultaneously. Moreover, there is no requirement for chlorination during peak tidal flow.

7. In Additional Comment 2 (p. 13), the EPA refers to radioactive releases from the Unit 3 blowdown flash tank vent. The setpoint for diversion of blowdown to the Unit No. 1 flash tank and, consequently, to the purification system, will be set to ensure that the releases from the Unit No. 3 flash tank vent will be, in all cases, insignificant with respect to proposed Appendix I and Regulatory Guide 1.42 guidelines for radioactive effluent releases.

8. In Additional Comment 4 (p. 13) the EPA refers to possible overload of the sand filter beds. The possibility does exist that an overload of the filter beds may eventually occur during the operation of Unit No. 3. Therefore, readings to determine the excess of effluent and appropriate action to increase the filter bed capacity will be taken before

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9. On page 8, the EPA notes that Figure V-4 in the DES shows that fish impingement increases drastically at velocities greater than 0.9 fps. They also note that the intake velocity at Unit 3 will be 1.5-2.0 fps at full flow. This leads them to question why the applicant did not utilize the information in Figure V-4 in designing the Unit 3 intake. In response, it should be noted that the intake velocity used by the applicant in preparing Figure V-4 is the velocity approximately 24 inches in front of the screens rather than at the face of the screens. For reasons which are unclear to Con Edison, the AEC Staff insists on referring to velocities through the screens. At Indian Point 3 the velocity 24 inches in front of the screens will be about 1 fps at full flow and 0.6 fps at reduced flow. This is consistent with the information in Figure V-4 and therefore does represent the best available technology.

10. On page 8 the EPA estimates that about 20 x 10^6 fish will be killed by impingement at all three Indian Point Units. This estimate is based upon the assumptions 1) that Unit 2 will kill 30,000 fish per day for six winter months, and 2) that another 2.5 x 10^6 will be killed during the remainder of the year. This yields a total of 8.0 x 10^6 killed at Unit 2 per year, and when scaled up to all three

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units, yields about 20 x 10^6 killed per year. The EPA supports this estimate by citing "Raytheon data which show about 1.3 x 10^6 fish killed in only two months of data collections."

The EPA has used the "Raytheon data" as if it represented typical fish collection information. On the contrary, the Raytheon data was collected because an unusual incident was occurring. Evidence that it was, in fact, unusual, is found in the fact that collections of such magnitude have not occurred since. The figure of 1.3×10^6 fish was obtained by extrapolating from data collected on only eight days during the two-month period. EPA's extrapolation of this data is not a valid scientific procedure.

In addition, it should be noted that during the period over which the Raytheon data were collected, the fixed screens were out of service much of the time, and full flow through the intake structure was maintained, rather than the reduced flow that is part of the normal winter operating regime now.

The EPA's method of extrapolating the data from this one unusual incident to predict the estimated number of fish expected to be killed in six months under a different set of intake parameters, is oversimplified to the point of being irresponsible.

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After the incident recorded in the Raytheon data, Con Edison instituted a procedure for systematic counting and classifying all fish collected. Thus, at the present time, there is good, reliable data showing fluctuations in fish collection throughout the year and over several annual cycles. The Staff presented these data and used them as a basis for estimates of plant impingement effects in the DES.

To reject scientifically valid data collected over a substantial period of time, and under conditions comparable to those expected at I.P. 3, and to adopt an estimate based on extrapolation from a single unusual incident, evinces an incorrect approach to environmental impact assessment. EPA strains to attribute a maximum degree of damage to the plant rather than trying to establish the truth based on sound scientific principles and reliable data. Neither the human environment nor the Agency's reputation is well served by such statistical juggling.

11. On page 9, the EPA states that they are "skeptical" that the Environmental Tech Spec procedure for reducing flow when impingement limits are exceeded will be effective, considering that the unit will supply baseload capacity to an already over-taxed system. They further note that only "realistic" measures should be indicated. In response, there

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is no justification for the EPA's "skepticism" or their implication that reduced flow is not a realistic measure. The applicant will abide by the Environmental Technical Specifications which are a part of the plant operating license, and will reduce flow or take other necessary action when required by these specifications.

12. On page 9, the EPA states that if fixed screens are truly effective in reducing impingement at Unit 1, a reason should be given for not installing them at Unit 3. The intake structure design at Unit 3 has been improved over that at Units 1 and 2. Fixed screens are not necessarily any more effective than travelling screens located in the same position. What makes the fixed screens at Unit 1 effective in reducing impingement is the fact that they are located at the entrance of the intake forebays, while the travelling screens are located further back in the bays. Without the fixed screens, fish could enter the forebay, be trapped by the flow, and eventually become impinged on the travelling screens further back. With the fixed screens installed at the entrance, fish cannot enter the forebay.

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Moreover, fish can avoid impingement on the fixed screens at the forebay entrance by swimming laterally. This is not possible when a screen, of whatever design, is recessed in the intake bay. Thus, it is the position rather than the type of screen that is important. For this reason, Con Edison has designed the Unit 3 intake in such a way that the travelling screens are effectively at the mouth of the intake bay. Fish cannot enter the bay behind the screens, and fish in front of the screens can swim laterally to avoid impingement. These travelling screens out front have the added advantage that they can be cleaned regularly and automatically while in place, unlike the fixed screens which must be removed for cleaning.

13. On page 9, the EPA associates a decline in the white perch population during the 1960's with operation of Indian Point Unit 1. This association is not supported by any data, and reflects an apparent "infamiliarity with the data collected and reported by New York University. In testimony presented at the Indian Point Unit 2 licensing proceeding, Dr. Gerald Lauer of New York University stated that "New York University researchers concluded that shore seining alone was totally inadequate for determining whether fish populations in the Hudson River estuary were increasing, decreasing or remaining the same over a period of

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years." On the contrary, it is more likely that the observed decline is a natural population fluctuation rather than a plant effect.

14. On page 10, the EPA states that "it is possible the irreversible point could be reached before 1978 or even July 1, 1977." There is no evidence that the plant impact will be either significant or irreversible by either of these dates. This is pure speculation on the part of the EPA.

15. The statement by EPA (Conclusion, Item 3) that "fish losses . . [are] . . . substantial enough that elimination of white perch and striped bass population as viable fisheries is probable" is pure speculation and is not supported by any credible evidence.

16. On page 10, the EPA states that for species with a short time lag between hatching and recruitment to the adult population, the population effects of plant operation may be even more severe than they are for striped bass. This is contrary to the biological principle that a species with a short generation time is more resistant to plant impact than one with a longer generation time since the part of the population unaffected by the plant can reproduce itself more rapidly.

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In the third paragraph of the covering letter, 17. as well as elsewhere in the comments (Conclusion, Item 3, p. 6; p. 7), the EPA refers to the requirements of the FWPCA. It should be noted that no guidelines for effluent limitations for this category of plants have yet been proposed by the EPA Administrator. Final guidelines will not be adopted for some time. The effluent limitations applicable to the I.P. 3 plant will not be determined until a proceeding on the NPDES permit is concluded. The EPA here is premature in its implication that a closed-cycle cooling system will be the "best practicable control technology currently available" for the Indian Point plant, and that such a system will be required to be installed by 1977 under h.PCA. If a decision is to be made in this regard, it should be done in accordance with the Administrative Procedure Act and the FWPCA, and not indirectly through comments on an isolated licensing action.

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Response of Con Edison to

Comments of the Attorney General of the State of New York

Con Edison submits the following response to the Comments of the Attorney General of the State of New York dated December 17, 1973 on the AEC Staff's Draft Environmental Statement for Indian Point 3:

1. The Staff should note that the Attorney General is speaking only for his own office. The Staff has received other comments from the Department of Environmental Conservation as representative of the state regulatory agencies.

2. The Attorney General misstates the DES when he says that the Staff found that the once-through cooling system "would cause unacceptable levels of mortality of aquatic organisms . . .". (p. 1) The DES said that a potential existed for this damage and the analysis contained in the DES in support of the conclusion makes it even more clear that this is only a potential.

3. The Attorney General correctly notes the lack of data on indirect effects and then concludes that the model predictions of adverse impact must be underestimations. (p. 3) In the absence of data, how can the assumption be made that there are serious adverse indirect effects? The DES correctly states that these indirect effects are unknown. There would seem to be no greater reason for assuming they are adverse than assuming that they are not adverse. In fact, because of the liberal use of gross assumptions in the original striped bass models, the predictions of adverse impacts are very likely overestimates. Data collected in 1973 confirm this point.

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4. The Attorney General asks the AEC Staff to consider unspecified future facilities on the Hudson River. (p. 4) If the Staff is to give any consideration to this position, it must also consider improvements to the river such as the elimination of sewage load which for example would probably eliminate any possible problem with dissolved oxygen but might at the same time reduce significantly the nutrients which provide the principal base for the present ecosystem.

5. The Attorney General desires that the AEC Staff re-examine the environmental impact of the proposed Cornwall Project, incorrectly designated as "Storm King". (p. 5) Consideration of the Cornwall Project is irrelevant to assessing the environmental impact of Indian Point 3 because the Cornwall plant is scheduled to come into operation after completion of Indian Point 3. If the AEC Staff is to consider the impact of Cornwall, it must accept that impact as found by the Federal Power Commission as the lead agency for environmental review. It would be duplicative and contrary to all principles of sound administrative review for the AEC Staff to attempt to repeat an examination that has already involved over ten years of litigation before the Federal Power Commission and federal and state courts. In any case the FPC license (Article 36(3)) requires Con Edison to make any needed modifications of the fish protective facilities, as may be ordered by the Commission, after notice and opportunity for a hearing. Thus, if the Cornwall Plant is shown to be adversely affecting the fishery in a significant way, the license provides procedures for assuring that appropriate corrective action is taken.

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6. The Attorney General states that passage of organisms through the Cornwall plant will result in substantial mortality. (p. 6) It should be noted that species of fish have been introduced to the upper reservoir of pumped storage plants by entrainment of eggs and larvae in the water of the lower reservoir. This indicates these sensitive life stages can withstand the rigors of the plant operation, although the degree of survival has not yet been quantified. Furthermore, the hearings before the FPC contained several pages of expert testimony contrary to the assertion of the Attorney General. After analyzing this testimony the FPC made the following finding:

> "233. We find that the evidence indicates a reasonable high rate of survival of eggs, larvae, and young fish of the year drawn into the plant."

This finding, together with the entire FPC decision, was affirmed on appeal to the Second Circuit Court of Appeals and the Supreme Court declined to review the case.

7. The Attorney General's discussion of entrainment at Cornwall (p. 7-8) is misleading. The predictions of the Carlson-McCann Report were based on potential reductions in the Cornwall segment only. The Staff's model attempted to estimate population effects in the estuary as a whole. The two are not comparable.

8. The discussion of thermal effects at Cornwall (p. 8) is erroneous. This matter was considered in a proceeding before the New York State Department of Environmental Conservation for a water quality certification, and the report of the "taring Officer dated August 12, 1971 contained the following:

> "Theoretical computations indicate that pumping and discharging combined, assuming no heat loss, could induce a frictional heating of approximately 1/2° Fahrenheit. On the other hand, computations indicate that the reservoir water would tend to cool more rapidly than the River water, resulting in a possible net differential in cooling by a maximum of 1/2° Fahrenheit. Accordingly, it appears, based on such computations, that there would be no net heating or cooling effect. In any event, it appears that any differential in temperature between the waters of the river and the upper reservoir would be insignificant and probably less than 1° Fahrenheit."

The Examiner's decision resulted in the issuance of

the water quality certificate by the Commissioner of Environmental Conservation. The validity of that issuance was affirmed by the Court of Appeals of the State of New York in a proceeding in which the Attorney General represented the Commissioner of Environmental Conservation and argued in support of the Commissioner's determination. The position now espoused by the Attorney General cannot be reconciled with that which he formerly presented in the State's brief in that case. Copies of pages 31-35 from that brief are appended hereto.

9. If the erroneous assumption is made that all waste heat is transferred to the water and if offsetting cooling is ignored, the proper computation is as follows. Recent improvements in the pump design indicate that 3 kilowatts of electricity will be produced for every 4 kilowatts of pumping. Operating at its maximum rate the plant will generate 17.76×10^9 BTUs per daily operational cycle. With a discharge flow of 3300 cfs/turbine, the discharge temperature will be increased 0.38°F, not 1.1°F as stated by the Attorney General. It should be noted that this discharge is only for 7.8 hours per day that the plant is in a generating mode and is less than the diurnal variations in Hudson River temperature.

10. The Attorney General correctly describes the Staff's thermal analysis as having "many conservative input conditions" (p. 11) but does not consider that many of the conditions involved highly improbable combinations of parameters.

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Measurements of the thermal plume with Indian Point 2 in operation is necessary to eliminate the many assumptions made in this thermal analysis.

11. Comment No. 8 above concerning the thermal discharge from Cornwall applies to the discussion on page 13.

12. The Attorney General's discussion of thermal plume analysis (pp. 13-15) indicates a complete misunderstanding of this subject. The purpose of the Staff's analysis is to show the temperature rise that can be expected and this analysis can be performed without knowledge of the actual ambient temperature. The excess temperature can then be added to the prevailing ambient temperature to obtain the computed temperature. Con Edison will obtain measurements of ambient temperature by going to areas very slightly (less than 1°). influenced by thermal plumes.

13. The statement that monitoring of the thermal plume is impossible (p. 15) is also erroneous. Con Edison will perform a survey of the thermal plume with actual measurements of the plume in the river on a grid pattern which will permit mapping of the thermal plume. This program has been approved by the Atomic Energy Commission Staff and is a requirement of the New York State Department of Environmental Conservation.

To Be Arguer By JULIUS FEINSTEIN

Estimated Time for Argument: 20 Minutes

COURT OF APPEALS

STATE OF NEW YORK

In the Matter of the Application of

RICHARD D. deRHAM, as Treasurer of SCENIC HUDSON PRESERVATION CONFERENCE, THE SIERRA CLUB and its ATLANTIC CHAPTER, THE HUDSON RIVER FISHERMEN'S ASSOCIATION, INC., THE CITY OF NEW YORK, TOWN OF POUGHKEEPSIE, and ROBERT H. BOYLE, THERESA M. ROTOLA, ELIOT D. HAWKINS, HELEN LEE SHERWOOD, RAYMOND E. BELL and DAVID SIVE, individually and as members of SCENIC HUDSON PRESERVATION CONFERENCE,

Petitioners-Appellants.

FOR AN ORDER PURSUANT TO ARTICLE 78 OF THE CIVIL PRACTICE LAW AND RULES

against -

HENRY L. DIAMOND, as STATE COMMISSIONER OF ENVIRONMENTAL CONSERVATION,

Respondent,

and

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., and TOWN OF CORNWALL,

Intervenors-Respondents.

BRIEF FOR RESPONDENT NEW YORK STATE COMMISSIONER OF ENVIRONMENTAL CONSERVATION

> LOUIS J. LEFKOWITZ Attorney General of the State of New York Attorney for Respondent

RUTH KESSLER TOCH Solicitor General

STANLEY FISHMAN JULIUS FEINSTEIN Assistant Attorneys General

of Counsel

(1) Effect on Fish Life

The question of the effect of the Project on the fish of the Hudson River was fully considered at the hearing and it was found (FINDING "41", 62a):

"41. The probabilities are minimal that a pumped storage project with respect to the pumping cycle itself will affect fishlife; there is not likely to be any significant adverse effect to fish of the River from a pumped generating plant at Cornwall, New York,. [sic] (M. 235-240)". (See, also, FINDING "42", T255.)

It is important to note that the plans and design for the Project include protective screens designed to protect small fishes from entering the Project's intake. (Exh. "E", Application of Con Edison.) The question of the Hudson River fishery was extensively considered by the Federal Power Commission (98a). According to the evidence in the record, commencing in 1965, a three-year Hudson River Fisheries Investigation, 1965-1968, sponsored by the then New York State Conservation Department and the United States Fish and Wildlife Service and financed by Con Edison, was conducted under the direction of a technical advisor of the United States Bureau of Sport Fisheries. The policy committee which directed this study was chaired by a representative of the New York State ' Conservation Department (now the Department of Environmental Conservation) and included representatives of the New Jersey Department of Conservation and Economic Development, the United States Bureau of Sport Fisheries and Wildlife, and the United States Bureau of Commercial Fisheries. This study concluded that there would not be any significant adverse effect on the fishery resulting from Project operation.²¹ (Exh. "I" of Con Edison's Application.)

32.

21. Annexed in the Appendix hereto (A-11), is a letter written by Dr. W. Mason Lawrence, Deputy Commissioner for Environmental Management in the Department of Environmental Conservation, dated May 17, 1971, which establishes that this Study was independently evaluated by the Commissioner and was found to "provide[s] the most critical evaluation of the potential effects of the Cornwall project". This letter clearly establishes that the Department conducted its own independent investigation of the Report and therefore the Commissioner was entitled to utilize this information in making the subject determination. Matter of Fink v. Cole, 1 N Y 2d 48 (1956), supra.

The Federal Power Commissioner reached the same conclusion after a careful investigation of the entire Project (see Order and Opinion of Federal Power Commission, Exh. "A" annexed to Application of Con Edison). Under the terms of the Federal Power Commission license, Con Edison is required to conduct further studies relating to fish populations in the Hudson River, their behavior and physical ability; and to study the development of artificial fish propagation facilities. Con Edison is also required to conduct post-operative studies " * * * to assess fully the effect of Project operation on the fish populations and their habitat" (Exh. "J" of Con Edison's Application). The > license is conditioned so as to require Con Edison to install fish protective facilities and to make any modifications to those facilities which may be ordered by the Federal Po. 1 Commission (Hearing Exh. "10").

There is ample evidence in the record that danger to fish life will be minimal and that the Commissioner had "reasonable assurance" that water quality standards would not be affected in this regard. The apprehensions of appellants that there is no reasonable assurance in this regard are unsupported by relevant facts in the entire record.

(2) Possible Thermal Pollution

Appellants' contention that the Commissioner lacked reasonable assurance that the waters of the State would not be thermally polluted flies in the face of the evidence in the record.

33.

First, the record establishes that there will be no significant temperature change in the waters of the Hudson River which this facility will pump from and then discharge back into (T 377, 385-386). Second, it is clear that there is no support in the record for appellants' contention that the heated water discharges from various <u>other</u> distant nuclear and conventional fossil fuel plants, which would supply off-peak energy to pump power for the Project, would cause thermal pollution at the site of those plants (10a, T 351, 487-488, 491, 493-496).

As noted earlier, the distant generating plants would be transmitting power to the Cornwall Project to be used for the withdrawal of water only at night or on weekends when they were <u>not working at full capacity</u> (supra, pp. 9-10 of this Brief).

The concern of appellants over possible thermal pollution overlooks the obvious fact that while the <u>other</u> (distant) plants of Con Edison may be operating for longer periods of time in order to supply energy for this Project, it does not necessarily follow, nor is there any evidence in the record, that they will be running any "hotter", in contravention of stream standards. It would appear that the appellants assume -- without any support in the record for such assumption -- a cause and effect relationship between a plant's running longer and its running "hotter". It is commonly known that these <u>other</u> plants now operate at or near peak capacity at many times; yet, there is no evidence, in the record before the Court, or otherwise, that such operation contravenes the applicable thermal standards of the State.

34.

The State's heated liquid standards (6 NYCRR Part 701), as a matter of law, are applicable to <u>all</u> heated discharges into classified waters of the State, regardless of the age or type of the source or the stream on which the source is located. This standard ensures that all existing, as well as future, Con Edison plants must at all times meet stream standards with respect to thermal pollution.

Appellants' argument that there is no reasonable assurance that thermal pollution may not occur at <u>other</u> existing plants as well as at presently unbuilt power plants of Con Edison, which in the future might be used to pump power to the Project, or possible thermal effects of other plants in the Northeastern area from which Con Edison may purchase such power, is erroneous, as a matter of law and fact, in that it is purely speculative, totally unsupported by the evidence in the record, and ignores the fact that the statutes and rules and regulations of this State bar the operation of <u>any</u> plant which will cause thermal pollution at its site of discharge.

35.







Mall Section

NEW YORK STATE PARKS & RECREATION South Swan Street Bldg. South Mall. Albany. New York .12223 Information 518 474-0456 Alexander Aldrich, Commissioner

Mr. George W. Knighton Chief

Environmental Projects Branch 1 Directorate of Licensing United States Atomic Energy Commission Washington, D.C. 20545

Dear Mr. Knighton:

Thank you for your letter of December 6, 1973 concerning 106 Review of plans for Indian Point. Since the Indian Point plant is already constructed the basic question is whether the operation of the plant will have an affect upon nearby sites that are listed upon the National Register. I note the response of Mr. William J. Cahill, Jr., Vice President, Consolidated Edison Company of New York, Inc. that there will be no impact on such sites, but am unable to corroborate this statement without material that might be presented in a 106 informational meeting.

If such a meeting is called for by your agency or by the Advisory Council, this office will send a representative.

Sincerely, lath file

January 23, 1974

F. L. Rath, Jr. Deputy Commissioner for Historic Preservation

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