UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
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CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. (Indian Point Station, Unit No. 2)	)	Docket No. 50-247 (Extension of Interim Operation Period)

HUDSON RIVER FISHERMEN'S ASSOCIATION PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW IN THE FORM OF AN INITIAL DECISION

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April 14, 1977

hearing jacket

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I

PRELIMINARY STATEMENT

(1) Consolidated Edison Company of New York, Inc. ("Con Edison") on June 6, 1975 filed an "Application for Facility License Amendment for Extension of Operation with Once-Through Cooling" at Indian Point Station Unit No. 2 ("Indian Point 2") with the Director of Nuclear Reactor Regulation, pursuant to 10 C.F.R. Section 50.90 of the Regulations of the Nuclear Regulatory Commission ("NRC" or "Commission"). The application requests an amendment pursuant to Paragraph 2.D.(1)(c) of the Indian Point 2 Facility Operating License to permit continued interim operation with the present once-through cooling system until May 1, 1981. Paragraph 2.E.(1) of the License provides in relevant part that:

> Operation of the I-P-Unit No. 2 with the once-through cooling system will be permitted during an interim period, the reasonable termination date for which now appears to be May 1, 1979. Such interim operation is subject to the following condition...
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> (c) If the applicant believes that the empirical data collected during this interim operation justifies an extension of the interim operation period or such other relief as may be appropriate it may make timely application to the Atomic Energy Commission. The filing of such application in and of itself shall not warrant an extension of the interim operation period.

(2) After extensive proceedings, the U.S. Nuclear Regulatory Commission, acting pursuant to its mandate under the National Environmental Policy Act and the Atomic Energy Act, ordered that the existing Indian Point Unit No. 2 generating station could not operate after May 1, 1979 with a once-through cooling system.

The basis for the license amendment was the extensive record supporting the conclusion that the present once-through cooling mode of operation at Indian Point 2 poses an unacceptable environmental risk to the aquatic life of the Hudson River, in particular the striped bass fishery. Indian Point 2 and 3 withdraw for cooling purpose more than one and a half million gallons of Hudson River water per minute. Millions of fish eggs and larvae are entrained in the plant where they are affected by sudden pressure, temperature and chemical changes, and mechanical abrasion.

Massive withdrawals of water can be eliminated by installation of a closed-cycle cooling system. Installing closed-cycle cooling at Indian Point Unit No. 2 alone will reduce the unit's withdrawal of water from 870,000 gallons per minute to 30,000 gallons per minute. Based upon such evidence the NRC ordered the cessation of once-through cooling at Indian Point Unit No. 2 by May 1, 1979.

(3) Throughout the Indian Point 2 licensing proceeding, Con Edison repeatedly argued for a 1981 date for cessation of once-through cooling on the grounds that such a date would

give the utility an opportunity to complete its research program. This position was thrice rejected by the NRC.

In its proposed findings of fact to the Licensing Board, Con Edison requested that 1981 be set as the date for cessation of operation with once-through cooling. The Licensing Board denied this request and set May 1, 1978 as the date. In so doing, the Licensing Board found the following with respect to the Applicant's research program.

> After careful consideration of the voluminous testimony on the research program, the Board reaches essentially the same conclusion as the Staff and the Intervenors. The Board is impressed by the careful planning, the magnitude of the effort, and the high level of competence of personnel engaged in the program. Much valuable information should come from the work. Applicant has, however, made no convincing showing that the data now available provide an adequate base for meaningful comparison with future data. Although some knowledge exists of the causes of natural fluctuations in year class sizes of the fish, no evidence suggests that quantitative relationships can be evolved in a short time. In addition to the high but unexplained natural variability, uncertainties will arise from the startup of other power plants on the river. In consideration of all the evidence, the Board concludes that the natural variations in the populations and phenomena being observed are so great as to make it unlikely that the Applicant can provide in a period as short as five years a statistically valid demonstration that the adverse impact of Unit 2 operations on the river ecology is acceptably small.
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> The Board areees with the Applicant that there is unlikely to be a serious permanent effect on the fishery by a delay of a year or two in starting construction of a closed-cycle cooling

> system. However, the Board also agrees with the Staff, HRFA, and the State of New York that operation of Unit No. 2 with a closed-cycle cooling system can have a seriously adverse effect on the fishery, and that Applicant's research program is unlikely to resolve the important questions in that extra year or two. The Board finds, therefore, that the research program does not presently provide sufficient reason to delay construction of a closed-cycle cooling system for Unit 2.
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> The Applicant has not, however, provided reliable, probative and substantial evidence to constitute a convincing case that its research program will resolve the question of the impact of entrainment at Unit Nos. 1 and 2 on the fisheries. Therefore, the Board concludes that the Applicant should proceed expeditiously with construction of a closed-cycle cooling system and that operation with the present system should be terminated by May 1, 1978.1/ [Emphasis supplied]

On its appeal from the Licensing Board's decision, the Company again requested that a 1981 termination date be set in order to permit Con Edison to complete its research program before commencing construction of the closed-cycle system. The Appeal Board modified some of the critical findings of the Licensing Board,2/ but found that even under facts more favorable to Con Edison, once-through cooling must cease by May 1, 1979,

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1/ Consolidated Edison Co. of New York, Inc. (Indian Point Unit No. 2), LBP-73-33 (September 25, 1973) reported at RAI-73-9 751, 778-81, 783.

2/ Consolidated Edison Co. of New York, Inc. (Indian Point Unit No. 2), ALAB-188 (April 4, 1974) reported at RAI-74-4 323-409. The full Commission subsequently found that the criticisms raised by the Appeal Board had been "thoroughly" answered by the FES for Indian Point 3. Consolidated Edison Co. of New York, Inc. (Indian Point Unit Nuclear Generating Station No. 3), Docket No. 50-286 (Dec. 2, 1975) reported at NRCI-75/12 835, 838.

a date which does not allow for completion of the research program prior to initiation of construction of a closed-cycle cooling system. Con Edison again sought to have this date modified in its petition for rehearing of the Appeal Board's decision. This was denied. Thus, the relief sought by Con Edison in its present application has been fully litigated before.

(4) Subsequently, in the licensing proceeding for Indian Point 3, an analysis was undertaken by the NRC Staff of the impacts of once-through cooling at both Indian Point 2 and 3.[1/] This analysis involved, inter alia, review of the 1973 data from Con Edison's Ecological Study Program which Con Edison also relies on to support its present application. This data was found not to alter the basic NRC staff determination that operation of Indian Point 2 and 3 with once-through cooling, in concert with other power plants on the river is unacceptable.[2/] With respect to the Applicant's research program, the FES states:

> The difficulties in obtaining adequate data on major issues in controversy cast serious doubt on the Applicant's claim that a final conclusion with respect to the date for closed-cycle cooling at Indian Point Unit No. 3 should await collection of further "empirical" data. 3/

1/ Final Environmental Statement related to operation of Indian Point Nuclear Generating Plant, Unit No. 3 (February 1975) ("IP3 FES"). The Board took official notice of relevant sections of this document. TR. 1104.

2/ IP3 FES at xi (a).

3/ IP3 FES at V-209.

The IP3 FES was specifically approved by the full Commission and found to constitute the "fresh look" which ALAB-188 had required. Having found the NRC Staff's analysis of the matter adequate under the National Environmental Policy Act ("NEPA"), the Commission found that "[n]o further Commission consideration of the once-through versus closed-cycle cooling question is necessary for either unit."[1/]

(5) In early 1975, prior to Con Edison's review of the full set of 1974 "post-operational" data, which data is claimed by Con Edison as key to understanding the ecological impacts of Indian Point 2, Con Edison decided to prepare the application for an extension of interim operation.[2/] Con Edison's witness stated that Con Edison had always intended to seek such an extension and that the reason Con Edison was engaged in the extensive ecological study was because the study was intended to show that a cooling tower was not needed.[3/]

(6) The application seeks an extension of interim operation until May 1, 1981 for the stated purposes of permitting Con Edison to complete its research program and the NRC Boards, as well as the NRC Staff to review these results and reach a decision before commencement of construction of the closed-cycle

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1/ NRCI-75/12 at 839. The Commission, of course, recognized that Con Edison could seek to reopen the matter; but, absent a license amendment, the requirement for closed-cycle cooling was deemed final.

2/ Tr. 188

3/ Tr. 190

cooling system.[1] The schedule proposed by Applicant thus contemplates a decision on the results of the research program by May 1, 1978.[2] The principal long-term benefit of the requested extension is alleged to be the lifting of the license requirement for a closed-cycle cooling system.[3]

(7) The Environmental Report ("ER") submitted by Con Edison in support of the extension application on June 6, 1975 states that the empirical data collected justify an extension of interim once-through operation. However, Con Edison presented none of the empirical data to support this claim in the ER. It was not until August 8, 1975 that Con Edison submitted Supplement No. 2 to the ER "First Annual Report for the Multiplant Impact Study of the Hudson River Estuary," (July, 1975) which contined most of this data.

(8) On October 14, 1975, Con Edison requested that a public hearing be held on its extension application. The Atomic Safety and Licensing Board ("the Board") issued a Notice of Hearing which was published on February 6, 1976.[4]

1/ Tr. 128-9; 132; 139

2/ Tr. 230; Licensee's Exh. OT-1 Environmental Report ("ER") Figure 1-2.

3/ Licensee's OT-1, ER at 1-4, 4-30 et seq.

4/ 41 Fed. Reg. 5459

In addition to the Applicant and the Staff, four parties were admitted as intervenors in this proceeding. The New York Atomic Energy Council,[1] the New York State Attorney General, the Hudson River Fishermen's Association and the Village of Buchanan. The Hudson River Fishermen's Association and the New York State Attorney General opposed the application, making this a contested proceeding. The Village of Buchan intervened in support of the requested extension. The New York Atomic Energy Council has not yet taken a position. There have also been several limited appearances entered in the course of the proceeding.

(9) In July, 1976, the NRC Staff issued a Draft Environmental Statement ("DES") on the proposed extension. The Staff concluded in the DES that the delay was justified: the first year was justified in order to preserve the choice of a closed-cycle system and to obtain the improvement in the biological evaluation; the second year of the extension was justified to provide time for the EPA proceedings and final decision to be completed.[2]

(10) Numercus comments were submitted on the DES after its circulation for public scrutiny. Federal and state agencies with jurisdiction over fish and wildlife matters opposed the

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1/ Subsequently, this office was dissolved and its functions assumed by the New York State Energy Office.

2/ DES at 4-2.

granting of the requested extension. These objections included those of the Environmental Protection Agency, Region II ("EPA") in deference to whom the granting of the second year of the requested extension had been proposed:

> "By taking the proposed action, NRC would contradict EPA's permit requirements, conflict with EPA's decision making responsibility and perhaps even prejudice the adjudicatory hearing on the closed-cycle cooling system and compliance schedule." 1/

The U.S. Department of the Interior, Fish and Wildlife Service; the U.S. Department of Commerce, National Maine Fisheries Service; the NYS Department of Environmental Conservation; the New York Attorney General, all found the rationale for the proposed action inadequate. The Hudson River Fishermen's Association, the West Branch Conservation Association and the Federated Conservationists of Westchester County also opposed the proposed action.

(11) In November, 1976, the Final Environmental Statement (FES) was issued. In it the Staff concluded that only the first year of the requested extension was warranted and hence recommended a termination date of May 1, 1980 for interim operation.

(12) On December 27, 1976, in a companion proceeding to determine the preferred alternative closed-cycle cooling system for Indian Point 2, the Board issued a Supplemental

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1/ FES at A-10.

Partial Initial Decision, setting May 1, 1980 as the reasonable termination date for once-through cooling, pursuant to Paragraph 2.E(1)(b) of the License.

(13) Evidentiary hearings before the Board on the extension application were held on December 7 through 10, 1976 and then again on February 23 through 25, 1977.

II

ENVIRONMENTAL MATTERS IN CONTROVERSY

(1) In accordance with the Notice of Hearing issued on February 6, 1976, the Board now addresses itself to the matters in controversy between the parties on the matter of whether, under the Commission's regulations, the applicable law and the terms of the operating license itself, the extension amendment should be issued as proposed.

(2) Throughout the course of the proceeding, Con Edison maintained the position that the application for an extension of interim operation until May 1, 1981 should be granted if there is a substantial possibility that analysis of the new data it intends to present might demonstrate that closed -cycle cooling is not required.[1] Con Edison even contends that if there is a substantial possibility of success on even one of the critical issues, the requested extension should be granted.[2]

Con Edison's position is that the two extra years are needed in order to both complete the research program and have the results of the program considered by both the NRDC Boards, as well as Staff, before inretrievable economic and environmental commitments are made to construction of a cooling tower.[3]

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[1] Tr. 130-132

[2] Tr. 140

[3] Tr. 128-132; 139

In its Proposed Findings of Fact filed on March 28, 1977, Con Edison even suggests that an "extension pro tanto" ought to be granted, i.e. for as long as may be necessary for Staff evaluation and assessment of the Applicant's new data and analyses.[1]

(3) The NRC Staff position is that "a one-year extension of once-through cooling to May 1, 1980 is warranted" and that "[n]o facility operating license amendment is needed to implement the change in view of the provisions of paragraph 2.E(1)(b) of Facility Operating License No. DPR-26"[2]

Based on the data which the Staff has seen and been able to evaluate, it sees no reason to change its finding reached in the IP3 FES that once-through cooling poses an unacceptable environmental risk.[3]

The Staff takes the position that, while the research program has yielded and is likely to yield valuable new data relevant to the issues deemed critical to the once-through cooling issue, the research results are unlikely to conclusively demonstrate that present operation with once-through cooling will not have an unacceptable adverse impact.[4]

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[1] Proposed Findings at 49.

[2] FES at ii.

[3] Tr. 1007-8; 734; 759; 884-7.

[4] Tr. 1019.

The Staff stated that the multitude of reports only recently submitted by Con Edison were of limited utility in their unanalyzed form and that these reports would require substantial analysis before the probability of these reports affecting the present license requirement for closed-cycle cooling could be determined.[1/] The Staff concluded that there was no realistic chance that the Staff could conclude this independent assessment of Con Edison's seven-year long study results before May 1, 1978, let alone in time to permit decision by the Board before that date.[2/] The Staff, therefore, concluded that there was no benefit to be gained from the extension in terms of Con Edison's avoiding committment of its resources to the cooling tower.

(4) The Hudson River Fishermen's Association and the New York State Attorney General's Office take the position that the May 1, 1979 date for cessation of once-through cooling was finally established after years of litigation and several unsuccessful attempts by Con Edison to justify a 1981 date for termination on the same grounds propounded in this proceeding. Since the issue of the appropriate termination

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1/ Tr. 1063-4

2/ Tr. 1127; Testimony of Van Winkle and Spore at 14.

date has been fully litigated, these parties contend that Con Edison may not obtain the requested extension merely on a showing that the biological data base will be substantially improved or that a possibility exists that the decision to require closed-cycle cooling might be altered by the new data. Rather, these parties claim that Con Edison must show that:

> a. The empirical data collected during interim operation requires findings different from those made in the Indian Point 2 licensing proceeding, as well as the findings made by the NRC staff in the IP3 FES which the full Commission found to constitute the "fresh look" required by ALAB-188; and
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> b. These findings compel a different conclusion as to the appropriate date for cessation of once-through cooling.

These parties take the position that the data presented by Con Edison in support of the application do not satisfy these criteria.

> a. Much of the empirical data supporting Con Edison's application was fully analyzed by the NRC staff in the IP3 FES and found not to alter the basic determination that closed-cycle cooling is required for Unit 2, as well as Unit 3.
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> b. Specifically, with respect to the key issues of compensation, f factors, contribution of the Hudson River fishery to the Atlantic fishery, and stocking, the empirical data which has been presented does not justify a different conclusion concerning the need for closed-cycle cooling at Indian Point 2, nor the appropriate termination for once-through cooling.

HRFA and the New York State Attorney General take the position that since Con Edison's collection of empirical data was substantially completed in mid-1975, Con Edison has had one and one half years to make its application for removal of the license requirement for closed-cycle cooling. Instead of providing the relevant data at an earlier date, Con Edison focused its priorities on completion of its final Report,[1/] thereby diverting its resources from completion of the individual studies.[2/]

(5) The New York State Energy Office also intervened in this proceeding, but has not yet taken a position on the environmental issues presently before the Board.

(6) The Village of Buchanan has taken a position in support of Con Edison and favors the granting of the requested two-year extension.

1/ This report was finally served on the parties on February 18, 1977.

2/ Tr. 464-5; 470

III

EVIDENCE ON ISSUES IN CONTROVERSY

A. The Applicant's Research program

(1) An important focus of this proceeding has been the Applicant's research program, its results to date and the data and analyses not yet presented, but which allegedly will be included in the final report on the research program. Numerous reports were introduced by Con Edison as evidence of the nature and amount of data being collected. These reports were received into evidence by the Board for this limited purpose only.

(2) Anticipated Value of the Program

The stated purpose of the extension application is to permit Con Edison time to complete its research program and have the results of that program reviewed by the NRC Staff and the Commission.

The evidence at the hearing showed, however, that the same limitations exist with respect to the research program as were revealed in the Indian Point 2 licensing proceeding, and which previously led this Board to conclude that the program results should not be awaited before construction of the closed-cycle cooling system must commence.

For example, the Staff testified that the two years of post-operational data (1974 and 1975) which Con Edison considers crucial to a demonstration of plant impact will not show what the effect of plant operation is on the Hudson River fishery because of the natural variations in population and phenomena

which exist.[1] Indeed, in Dr. Van Winkle's judgment, even if the impact of plant operation were a 50% reduction in the young-of-the-year striped bass population, he doubted if such an impact could be separated out and determined from the two years of post-operational data.[2]

Furthermore, the value of the 1973 through 1975 data is limited because of the variability between this data and earlier data collected on the Hudson River. Staff's witness testified that the analysis of variance and multiple regression techniques utilized by the Applicant are seriously flawed in that Con Edison is relying on base-line environmental measurements, going back to the mid-1960's, which were collected by different researchers, utilizing different techniques and equipment, for different and more limited purposes.[3]

The value of the post-operational empirical data is also limited because it will not reflect the impacts of both Indian Point 2 and 3, which was the original intent of the program.[4]

1/ Tr. 992; IP3 FES V-205

2/ Tr. 1021. Con Edison claimed in the Indian Point 2 licensing proceeding that it could demonstrate conclusively by April, 1976, whether a 25% reduction in the abundance of juvenile striped bass had occurred because of plant operation. At the hearing, Con Edison's expert witness admitted they had been unable to come up with such evidence. (McFadden, Tr. 445-6)

3/ Tr. 993-4; IP3 FES, V-209.

4/ Unit was not fully operational until the 1976 spawing season.

(3) Data and Analyses Data Presented

(a) Entrainment Mortality. The results of the NYU Ichthyoplankton Studies for Indian Point for 1973, 1974 and 1975 were presented.[1] The value of the 1973 data is questionable, since plant operating conditions were highly variable, a ΔT was present on only three sampling days and then only for a small portion of the sampling cycle.[2] Even so, utilizing the 1973 NYU data to determine f_c values, the Staff's analysis showed the impact from plant operation still to be high.[3]

With respect to the issue of latent mortality from entrainment, Con Edison has been unable to come up with evidence on whether fish eggs, larvae and juveniles would survive for more than 72 hours after leaving the plant,[4] even though Con Edison's witness testified that there could be significant mortality after the 72 hour point.[5] This lack of information is important since the NYU Studies themselves suggest that latent effects may just be beginning to express themselves between 42 and 72 hours.[6]

1/ Licensee's Exhs. OT-12, 13, 15 and 16.

2/ IP3 FES, V-79 et seq.

3/ IP3 FES, V-218 and V-219

4/ Tr. 1364-5 (Dr. O'Connor)

5/ Tr. 629

6/ Licensee's OT-15 at 248

Some evidence was presented by Con Edison to show that sampling methods may be contributing to the observed mortalities in entrained fish due to the fact that net-induced mortality may be greater in the discharge than in the intake.[1/] However, Con Edison's witness, Dr. O'Connor, testified that a critical step in the testing of this hypothesis would be to do testing in the plant itself as opposed to in the experimental flume, and that this had not been done.[2/] Furthermore, the use of a larval table to measure entrainment mortality - a method used at Bowline Point and Roseton and which appears to be a more successful method of sampling - has not been used and is not presently planned for use at Indian Point.[3/]

(b) f Factors. The NYU Progress Report for 1974 states that because of the different designs and purposes of the river and intake sampling programs, the data are not comparable.[4/] Dr. O'Connor confirmed this observation in his testimony at the hearing and stated that this observation was applicable to the 1973 and 1975 data, as well.[5/] Despite this fact and the fact

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1/ Licensee's Exh. OT-14.

2/ Tr. 631, 641

3/ Tr. 557

4/ Licensee's Exh. OT-16, p.302

5/ Tr. 621-2

that no correction factor has been developed,[1] Con Edison's consultant Dr. Lawler has utilized these data for just such comparative purposes to develop f factor values.[2]

Furthermore, the f factor values presented in the Con Edison testimony[3] must be ignored since it is admitted that these tables were developed before the relevant data was available and that this data subsequently showed the estimated f factor values to be higher than the tables indicate.[4] Nor, as Dr. Lawler further admitted, do these tables reflect the results of the La Salle hydraulics study which indicate that much more of the intake water is drawn from the lower half of the water column (where the organisms are concentrated) than Dr. Lawler had calculated.[5]

(c) Compensation. Con Edison presented testimony to support its contention that compensatory mechanisms are at work in the Hudson River striped bass fishery which will offset losses to the fishery resulting from operation of Indian Point 2. These mechanisms are alleged to be: bluefish predation of juvenile striped bass and cannabalism which may be density dependent regulatory mechanisms; density dependent growth of striped

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1/ Tr. 650

2/ Tr. 478-82

3/ Testimony of McFadden et al., Tables F-1, F-2 and F-3

4/ Tr. 657-9, Licensee's Exh. OT-13, Tables 18 and 19

5/ Tr. 682

bass juveniles; and the stock recruitment curve based on the relationship of the commercial fishery stock in any given year and then five years later.

The Staff testified that all this empirical data on compensation was, at best, a suggestion that compensation has been occurring and that the data is not going to give a handle on the values to be associated with such compensatory mechanisms should they in fact exist.[1/]

On cross-examination, Dr. McFadden admitted that the data on bluefish predation is insufficient to sustain the inference that such predation may be a density-dependent regulatory mechanism.[2/] This was bolstered by evidence presented by the Applicant which showed that in 1974, even though extensive studies were undertaken, there was no evidence found of bluefish predation of striped bass.[3/] Dr. McFadden also had to admit that no compensatory capacity may be quantified on the basis of such data.[4/]

With respect to the density-dependent growth data, it was brought out on cross-examination of Con Edison's witness, Dr. Campbell, that there has been no analysis of absolute lengths of juveniles sampled despite the fact that growth rates are different in fish of different ages and that this was

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1/ Tr. 925-6

2/ Tr. 693

3/ Licensee's Exh. OT-1, Supp. 2 (Vol. 1) at V-41.

4/ Tr. 311-12

therefore an important factor to consider in determining the relationship of growth to density.[1/]

Most importantly, with respect to the commercial fishery data upon which the stock-recruitment relationship was based, the Staff's witness testified that this data was not the kind of data upon which a final decision on impact should rest.[2/] The problems with the commercial fishery data were brought out in cross-examination of Con Edison's witnesses.[3/] Even more critical, the applicant's whole stock recruitment analysis fell apart when a six year lag time, rather than a five year lag time was used,[4/] even though both five and six year old striped bass are the predominent year classes which make up the spawning stock of the Hudson River.[5/]

(d) Real-Time Model. Dr. Lawler testified that by and large, the results of this third generation model were similar to the results of his earlier model.[6/]

1/ Tr. 325-6

2/ Tr. 1030-31

3/ See e.g., Tr. 386-88

4/ Tr. 972-3; 332-3

5/ Tr. 972-3

6/ Tr. 322; Nov. 10 Submiss. of Con Edison to the Board, p.5

(e) Contribution to Atlantic Fishery. Con Edison presented evidence indicating that the overall contribution of the Hudson River striped bass to the Atlantic coast fishery (defined as Cape Hatteras to Maine) is approximately 25%[1/] This conclusion was subsequently repudiated in the testimony of Dr. May at December 7th and February 23rd hearings. He testified that the "proper" estimate is a 7% contribution to the coastal fishery and a 15% contribution to the NRC-defined "inner zone."[2/] Dr. May was unable to explain how the Hudson River striped bass fishery could comprise 15% of the inner zone fishery and 7% of the coastal fishery, when the inner zone represents only approximately 5% of the coastal fishery.

In addition to the last minute repudiation of the final results of its study, the following facts on the contribution study are noteworthy. The Texas Instrument study took as a basic assumption the fact that fish taken from a particular spawning ground originally come from that spawning ground.[3/] There was no evidence to support this assumption. In addition, the study was limited to sampling the Atlantic coastal fishery in only one year, 1976. There was no sampling of the Atlantic coast fishery in 1976, nor does Con Edison intend to do such sampling in 1977 or subsequent years, even though Con Edison's experts recognize there can be substantial variation year-to-year.[4/]

1/ Nov. 10 Submiss., p.1; Licensee's Exh. OT-2, pp.II-2 and II-3

2/ Testimony of McFadden et al. (Dec. 7), p. 63.
Testimony of McFadden et al. (Feb. 23), pp. 6-11

3/ Tr. 403

4/ Tr. 535

(f) Stocking. Con Edison's expert testified that it can not be determined by January 1977 whether or not hatchery-reared fingerlings which have been stocked will return to the Hudson River to spawn.[1/] Yet, as the Staff's witness testified, for the stocking results to be significant, one must know whether this will occur.[2/]

(g) Multiple Regression Analyses. These analyses, summarized in the McFadden testimony (Dec. 7, 1976), attempt to determine the relationship between striped bass juvenile abundance and variables such as power plant withdrawals, bluefish predation, etc. With respect to the latter, Dr. McFadden admitted on re-direct that his testimony on the relationship between bluefish predation and striped bass abundance was misleading. The observed relationship is between abundance of bluefish (not predation) and abundance of striped bass, and he admitted there was insufficient data to support the inference of a relationship between bluefish predation and striped bass abundance.

Con Edison's expert testimony with respect to the relationship of abundance of striped bass to power plant withdrawals (Dec. 7 Testimony at 13) was contradictory to evidence on this same subject in one of Con Edison's own exhibits.[3/] In addition, Con Edison assumed that the plants on the Hudson River which

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1/ Tr. 510-11

2/ Tr. 1034; IP3 FES, XI-43

3/ Licensee's Exh. OT-1, Supp. 2 (Vol. 1), p. 2-4

were operating during the period studied were all operating at full potential of water withdrawal capacity, even though in fact the actual water withdrawals may have been substantially lower.[1/] Of note is the fact that in 1974, the first "post-operational" year at Indian Point 2, the abundance of striped bass juveniles was about 25% of the abundance of the previous year.[2/] When asked about the inconsistency of this fact with Con Edison's testimony that the plant has no observed relationship to striped bass abundance, Dr. Campbell defended by saying that this could be due to the natural fluctuations in year class size which can mask power plant impacts.[3/] This is the precise point which the Staff has made to illustrate the problems with determining plant impact from the two years of post-operational data.

Finally, there was no testing for a non-linear relationship among variables, although Dr. Campbell admitted that such a relationship could exist and could have a significant impact.[4/]

(4) In view of the prior litigation on the issue of the appropriate termination date, the Board finds that Con Edison has the burden of presenting new evidence which compels a different

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1/ Tr. 438

2/ Licensee's OT-1, Supp. 2 (Vol. 1) p. 2-5

3/ Tr. 441

4/ Tr. 449

result on the date for cessation of once-through cooling. Because of the many serious problems with the data and analyses presented in support of the extension application and because of the limits which exist in the research program's ability to give a definitive answer to the question of the impact of once-through cooling, the Board finds that Con Edison has not carried its burden of proving that interim operation should be extended and that the results of its research program should be awaited prior to its proceeding with the construction of the closed-cycle cooling system.

(5) Furthermore, the principal benefit of the requested extension, as claimed by Con Edison, is to provide the Commission time to review the results of the Ecological Study Program. Con Edison sees this review as leading to elimination of the requirement for closed-cycle cooling in its entirety. Con Edison thus compares the savings to its customers from the elimination of this requirement, $325,355,000, as a benefit of the proposed extension to the adverse impact of the extension estimated at $112,000.[1/] Nowhere, however, does Con Edison attempt to quantify the "possibility" that such an enormous expenditure will be avoided in the time requested. It simply assumes that the probability of avoiding the cooling tower requirement is "1."

The Staff, on the other hand, testified that the

1/ Testimony of Gueron et al. (January 18, 1977) at 12-13

probability of attaining the principal benefit claimed is virtually zero:

> The Staff concludes that, in the time expected to be gained for further study and evaluation, virtually no probability exists of an event occurring which prevents the Applicant from being required, if it wishes to continue operation of Unit 2 after May 1, 1981, to commit resources to the cooling tower. 1/

The Board finds the Staff's testimony on this point convincing. It is unrealistic to presume that an independent assessment of the numerous reports and, in particular, the final report which was not publicly available until February 18, 1977 could be completed in time for a decision on the ultimate issue before May 1, 1978. 2/ The Board finds that these reports are of limited utility in their unanalyzed form and that the Staff must and should be afforded full opportunity for substantial analysis before a recommendation on the ultimate decision can be made.

The Board is also aware of the fact that Con Edison itself has put several years work into completion of its major, culminating report. Concommitantly, the Staff and others cannot be expected to speed through a review of the results of these studies. It is noteworthy that individual reports which would have speeded the Staff's review were not

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1/ Testimony of Van Winkle and Spore at 14.

2/ This is the date before which Con Edison seeks a decision Tr. 128-132; 139

submitted to the Staff or other parties as soon as they could have been because of the priority placed by the Applicant on completion of the 1977 Report.[1/] Thus, the Applicant has in part brought upon itself the present time bind. Nor was the Applicant precluded from an earlier filing of its application to lift the license term requiring closed-cycle cooling. It could have initiated that process at any earlier date, thus making feasible completion of a review and decision thereon by May 1, 1978.

It should be noted that speedy review of Applicant's numerous reports is hampered by its failure to provide the Staff with sufficient data, particularly in connection with some of the most critical issues such as entrainment mortality, to independently assess and replicate the results of the Con Edison reports.[2/]

B. Other Alleged Benefits

Having found that Con Edison has failed to meet its burden of presenting convincing new evidence to compel alteration of the termination date, and having found that the principal benefit sought by Con Edison would not in fact be provided by the proposed extension, the Board now turns to the other alleged benefits of the proposed action. The Board considers these alleged benefits, no matter how large, insufficient in and of themselves to justify the action since they do not relate

1/ Tr. 464-5. Licensee's OT-1 at 316 states, for example that the 1975 study results should be available in mid-1976. Instead they were not received until December, 1976, or Feb 1977 because of the priority placed on the "January" Report which eventually was released in February 1977.

2/ Tr. 1298-1306

to new empirical data collected during interim operation, but the financial savings accruing from a delay in interim operation. As far as the Board is concerned, this issue is res judicata. However, even weighing the savings against the cost to the fishery, we find the balance is against the extension.

(1) Con Edison's witnesses testified that the proposed extension would yield benefits of $6,797,000 and costs of $112,000.[1/] The approach used in computing benefits was to calculate the difference between incremental generating costs for a cooling tower construction program with an outage for tie-in of the system beginning May 1, 1980 as compared with May 1, 1981.[2/]

(2) The NRC Staff also calculated the benefit of the proposed action as the difference between incremental generating costs for a cooling tower construction program with an outage for tie-in beginning May 1, 1980, as compared with May 1, 1981. This analysis showed the money savings of the proposed extension to be $10,620,700.[3/] However, the costs were calculated to be

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1/ Testimony of Gueron et al. (January 18, 1977) at 12.

2/ Testimony of Gueron et al. at 12.

3/ Testimony of Spore and Van Winkle, Table 7

equal to or greater than $11,053,500.[1/]

C. Costs of the Proposed Action

(1) The Applicant calculated the costs of the proposed action to be $112,000. This represents the costs to the striped bass sport fishery of an extension from May 1, 1980 to May 1, 1981, based on the assumption that the plant will reduce the striped bass young-of-the year population by less than 1%.[2/] This cost figure includes no value for the following:

a) Losses associated with other species than striped bass;
b) Damage to the ecosystem;
c) Loss of option value for striped bass;
d) Loss of option value for other species;
e) Risk of long-term diminution. [3/]

(2) The Staff calculated the costs of the proposed action to be equal to or greater than $11,053,500. The analysis is based on the assumption that since the Commission has required a cooling tower at Indian Point 2, the value of the damage to the Hudson River fishery prevented must be at least equal to the costs of the cooling tower.[3/] The cost of the cooling tower was taken by the Staff to be $187,778,600.[4/] The Staff then calculated the increased risk of incurring an irreversible loss to the

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1/ Id. at 24

2/ Tr. 1472

3/ Tr. 1568-1580

4/ Testimony of Spore and Van Winkle at 20

fishery as a result of the requested extension.

(3) The Board finds that the Regulatory Staff's analysis is the more reliable estimate of the cost to the fishery. The Staff is correct in inferring that in originally ordering cessation of once-through cooling this Board weighed the costs and benefits of such a requirement and concluded that the benefits, including the non-quantifiable benefits to the fishery properly included in the balance called for by NEPA, exceeded the costs of the cooling tower.

Furthermore, we find no merit in Applicant's argument that the existence of certain license conditions, particularly 2.E(1)(b) invalidates the Staff's method of analysis. The fact is that the license imposes a final requirement of cessation of once-through cooling at Indian Point 2. The conditions provide Con Edison with the opportunity of coming in to seek an alternation of this requirement based on new evidence, something Con Edison would be entitled to do in any event under the Commission's own regulations. Since the decision was made that closed-cycle cooling is required at Indian Point 2 absent a license requirement to the contrary, the Staff was correct in assuming that in establishing that final license requirement, the benefits were determined to exceed the costs.

(4) The Board finds that the cost of the proposed extension, to the extent it can be expressed in monetary terms

is on the order of at least $11,000,000 and that the costs are on the order of $6,000,000 - $10,000,000. The Board therefore concludes that the costs of the proposed action exceed the benefits.

D. Relationship to EPA Proceeding

(1) The Board finds that the Staff was correct in not granting the second year of the requested extension on the grounds it had originally proposed, namely that the second year would allow EPA to reach its final decision on the need for closed-cycle cooling at Indian Point 2. The NRC has its own mandate under the National Environmental Policy Act, separate from EPA's under the Federal Water Pollution Control Act Amendments of 1972, which it must meet and may not avoid by deferral to another agency for decision. In meeting its NEPA responsibilities, the NRC is not violating Section 511(c) of the Water Act since the NRC is not reviewing effluent limitations or other requirements established by EPA. Furthermore, by granting the two-year deferral the NRC would tend to undercut rather defer to EPA's authority since the EPA permit for Indian Point 2 requires cessation of once-through cooling by May 1, 1979.

IV

CONCLUSIONS

WHEREFORE, IT IS ORDERED, in accordance with the Atomic Energy Act of 1954, as amended, the National Environmental Policy Act of 1969 and the regulations of the Nuclear Regulatory Commission, that

(1) Since the Board concludes on the basis of the record of this proceeding, including all the exhibits admitted into evidence, the transcript of hearings, and the matters of which official notice has been taken that Con Edison has not met its burden of showing that an alteration in the date of termination of once-through cooling is compelled by the new evidence nor that the benefits of the proposed extension exceed the costs, the proposed license amendment extending the period of interim operation until May 1, 1981 is hereby denied.

(2) The Director of the Office of Nuclear Reaction Regulation is ordered, pursuant to 51.52(b)(3) of the Commission's regulations, to cause this Initial Decision to be distributed as provided in §51.26(c).

(3) This Initial Decision shall constitute the final action of the Commission forty-five days after its date, unless exceptions are taken in accordance with Section 2.762 or the Commission directs that the record be certified to it for final decision. Within seven (7) days after service of this Initial

Decision, any party may take an appeal to the Atomic Safety and Licensing Appeal Board by filing of exceptions. A brief in support of the exceptions shall be filed within fifteen days thereafter (twenty days in the case of the Staff). Within fifteen days after the service of the brief of appellant (twenty days in the case of the Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

Respectfully submitted,

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Dated: April 14, 1977