09/20/'82

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
PHILADELPHIA ELECTRIC COMPANY	)	Docket Nos. 50-352
	)	50-353
(Limerick Generating Station, Units 1 and 2)	)	

NRC STAFF'S TRIAL BRIEF ADDRESSING THE SUPPLEMENTARY COOLING WATER SYSTEM FOR LIMERICK

In a Memorandum and Order of August 23, 1982, the Licensing Board required that trial briefs be filed at the time of filing of written direct testimony. Pursuant to the Board's Order, the Staff is filing its trial brief, which includes an outline of the testimony and a statement of the purpose of the testimony offered on the three contentions to be considered in the hearing session on the Supplementary Cooling Water System.

The Order required Applicant to include in its trial brief the status of reviews being performed by other agencies and encouraged the Staff and Del-Aware to do the same. The Staff understands the status of reviews and approvals by the other agencies with jurisdiction over the Point Pleasant Diversion Project to be unchanged from that previously reported to this Board,[1/] with the exception of the Pennsylvania

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1/ By letter dated September 1, 1982, the Staff requested that the Delaware River Basin Commission (DRBC), the Corps of Engineers, and the Pennsylvania Department of Environmental Resources file reports with the Board and parties on the status of reviews and permit issuances within their respective jurisdictions in connection with the Point Pleasant project. Replies to that request have not yet been received.

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Department of Environmental Resources (PADER). On September 2, 1982, PADER issued its Environmental Assessment related to all components of the Point Pleasant Diversion Project. On the basis of this Environmental Assessment, PADER issued all permits for the Point Pleasant Diversion Project for which it has responsibility. The Corps of Engineers, Philadelphia District (Corps) has not yet issued the necessary permit under § 404 of the Clean Water Act[2/] and § 10 of the Rivers and Harbors Act of 1899.[3/] As to DRBC, it is our understanding that all approvals required from it for Point Pleasant have already been issued.

I. CONTENTION V-16a (IN PART)

Contention V-16a states:

> Noise effects and constant dredging maintenance connected with operations of the intake and its associated pump station will adversely affect the peace and tranquility of the Point Pleasant proposed historic district.

In response to this contention the NRC Staff has filed two pieces of testimony. Dr. Anthony J. Policastro, Principal Investigator, Power Plant Noise Impacts, Argonne National Laboratory (ANL), has reviewed information provided by Philadelphia Electric Company with respect to ambient noise level measurements at the location of the proposed Point Pleasant pumping station. Using the University of Illinois/ANL community noise model, he has predicted noise levels at the four nearest residences

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2/ 33 U.S.C. § 1344.

3/ 33 U.S.C. § 403.

resulting from operation of the two transformers to be located adjacent to the pumphouse. He has also predicted the approximate distance from the transformers at which transformer tones would no longer be audible. The model results indicate that the low-frequency transformer tones will be audible to residents of the four nearest houses, but that the tones will not be audible beyond a distance of about 175 meters from the transformer location. Policastro Testimony, at 6. Dr. Policastro testifies that this transformer noise may be objectionable to the nearest residents, but that the noise levels reaching these residents can be significantly reduced by construction of an enclosure around the transformers, use of "quieted" transformers, or use of a combination of these mitigation methods. Testimony, at 5.

Dr. Palicastro states that his further evaluation of the potential noise impacts of the operation of transformers will be presented in the Draft and Final Environmental Statements (DES/FES). At that time, information may be available on the precise transformers purchased and their sound levels and on final plans and specifications for the pumping station. The noise impacts anticipated from these transformers will be reported in the DES/FES. Testimony, at 6.

Brian J. Richter, a Staff technical reviewer in the area of socioeconomic impacts (including considerations of impacts on historical and cultural resources) has considered whether the noise impacts (mitigated) predicted by the University of Illinois/ANL model would adversely affect the peace and tranquility of the proposed Point Pleasant Historic District. Mr. Richter states that there are no noise standards specific to historic sites. Richter Testimony, at 4. Nevertheless,

"introduction of...audible...elements that are out of character with the property or alter its setting" and that may cause a change "in the quality of the historical, architectural, archeological, or cultural characteristics that qualify the property to meet the criteria of the National Register [of Historic Places]"[4/] may be adverse impacts that need to be considered in connection with the Federal Government licensing actions on the Point Pleasant Diversion. Testimony, at 3-4. Mr. Richter states that the Corps has acted as the "lead agency" for consultation with the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Officer (SHPO) on the potential impacts of the construction and operation of the Point Pleasant intake and pumping station on the proposed Point Pleasant Historic District and the Delaware Division of the Pennsylvania Canal, a property already listed on the National Register of Historic Landmarks. Testimony, at 4.[5/] The ACHP and SHPO have not identified noise from the operation of the pumping station as one of the adverse impacts of concern for the historic and cultural characteristics of the proposed Historic District and the

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4/ 36 C.F.R. § 800.3.

5/ See the Corps' Notice of the application by Neshaminy Water Resources Authority for a permit for the Point Pleasant intake and pumping station (April 6, 1981), wherein the Corps states:

"A portion of the project site (Pennsylvania Canal) lies within an area which is listed on the National Register of Historic Places. This office will evaluate the probable impact of the proposed work on historic resources within the permit area."

Pennsylvania Canal. Testimony, at 4-5. Nevertheless, Mr. Richter testifies that the Staff will continue its review of the potential for adverse impacts on these historic sites from noise emanating from the pumping station. That review will consider whatever additional information the Applicant supplies on the precise transformers to be purchased on their anticipated sound levels and on the final plans and specifications for the pumping station. The results of the Staff's review will be reported in the Draft and Final Environmental Statement. Testimony, at 5-6.

Dr. Policastro and Mr. Richter have not evaluated noise associated with dredging, since the riverbed at the intake location is composed of rock and any maintenance work that may be required on the intakes will not necessitate dredging.[6/]

II. CONTENTION V-15 AND V-16a (IN PART)

Contention V-15 and V-16a (in part) states:

> The intake will be relocated such that it will have significant adverse impact on American shad and shortnose sturgeon. The relocation will adversely affect a major fish resource and boating and recreation area due to draw-down of the pool.

In response to this contention the NRC Staff files the testimony of Dr. Michael T. Masnik, Senior Fisheries Biologist in the Aquatic Resources Section of the Environmental Engineering Branch, and Rex G. Wescott, Hydrologist in the Hydrologic and Geotechnical Engineering

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6/ PADER Environmental Assessment, p. 46.

Branch, both in the Division of Engineering, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission.

Dr. Masnik evaluated the effects of the operation of the proposed Point Pleasant intake on the American shad and shortnose sturgeon fisheries resources of the Delaware River. Based on his review of (1) the location, design, and operating characteristics of the proposed intake structure, (2) the scientific literature on wedge-wire screens for use at intakes for electric power plants and (3) the shad and shortnose sturgeon fisheries resources in the vicinity of Point Pleasant, Dr. Masnik assessed the potential impact of the operation of the proposed intake structure on these fisheries resources.

Dr. Masnik reviewed the characteristics of the proposed intake structure as set forth in Brundage (1982), a report prepared for Neshaminy Water Resources Authority (Exhibit 1). This information includes location, configuration and design of the intake and through slot velocity of the wedge-wire screens.

1. SHORTNOSE STURGEON

Using available life history data, site specific information and operational characteristics of the intake, Dr. Masnik testifies that the results of his analysis were consistent with those contained in the assessment by Dr. H. Brundage and the Section 7 Consultation-Biological Opinion prepared by the National Marine Fisheries Service (NMFS) for the U.S. Army Corps of Engineers (Exhibit 2). Dr. Masnik acknowledges the

jurisdiction and expertise of the NMFS in implementing the Endangered Species Act[7/] for the shortnose sturgeon.

Dr. Masnik examined the following potential sources of mortality from operation of the proposed intake:

A. Entrainment Of Eggs And Larvae

After determining that the spawning of shortnose sturgeon in the Delaware has only been observed downstream of Pt. Pleasant and reviewing the characteristics of the eggs, Dr. Masnik concluded that "entrainment of eggs is highly unlikely and poses no threat to continued existence of this species in the Delaware River." After evaluating the data on growth and behavior of larvae and design and placement of the intake screens, the same conclusion, no anticipated impact due to entrainment, was reached for shortnose sturgeon larvae.

B. Impingement Of Juveniles Or Adults

Considering the velocity of water movement through the screen as compared to river flow across the screens, data on swimming speeds of juveniles and adults, and impingement studies on the Hudson River, Dr. Masnik did not anticipate any impact on shortnose sturgeon juveniles and adults due to impingement.

C. Critical Habitat

Since the critical habitat of shortnose sturgeon in the Delaware River has not been identified, Dr. Masnik concludes that, even if one assumed that the near vicinity of the Point Pleasant intake were used by shortnose sturgeon as a habitat the loss of .05 acres associated

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7/ 16 U.S.C. § 1531 et seq.

with the operation of the intake would not jeopardize the continued existence of this species in the Delaware River.

D. Turbidity

Following his review of the operational impacts on turbidity in the Delaware River at Point Pleasant, Dr. Masnik concluded that the increased turbidity due to resuspension during backwashing of the intake would not have any significant impact on the Point Plesant area as a potential habitat for the shortnose sturgeon.

E. NRC Reliance On The Corps Of Engineeers' Finding On Compliance With Engangered Species Act

The shortnose sturgeon has been designated an endangered species and the U.S. Army Corps of Engineers, Philadelphia District, has the responsibility for evaluating compliance with the Endangered Species Act as part of its determination as to whether to issue a permit under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. In fulfillment of its responsibilites under the Endangered Species Act, the Corps has consulted with the NMFS, which has issued a Biological Opinion finding that there will be "no jeopardy" to the shortnose sturgeon from operation of the Point Plesant intake. Pursuant to regulations of the Council on Environmental Quality,[8/] the NRC Staff intends to rely on the NMFS finding as to compliance with the Endangered Species Act.

8/ See 40 C.F.R. §§ 1500.4, 1501.5 and 1506,3, which provide that a Federal agency can rely upon and adopt appropriate environmental analyses prepared by another agency.

2. AMERICAN SHAD

Based on his review of (1) the present distribution of American shad in the Delaware River; (2) the life history and behavior of early de... mental stages of the species; (3) the location, design and operating characteristics of the proposed intake: Dr. Masnik has drawn conclusions concerning six potential mechanisms by which American shad could be affected.

A. Entrainment Of Eggs And Larvae

After evaluating the possible extenuating effects of an eddy current on the entrainment of shad eggs and larvae, Dr. Masnik concludes that the loss of shad eggs at the proposed pumping station would not be significant since the percentage of shad eggs entrained would not be greater than the percentage of water volume taken in, i.e., 5% and more typically 2%, and that the intake design "would probably reduce that figure by half."

As to shad larvae, Dr. Masnik's testimony is that the design of the intake and the behavioral responses of larvae are likely to decrease the estimated number of entrained larvae drawn from volumetric calculations alone.

Based on his analysis, Dr. Masnik concludes that the loss of eggs and larval American shad due to entrainment, given the possible existence of an eddy, would be insignificant and "would not jeopardize the continued existence or anticipated future gains in population of this species in the Delaware River."

B. Impingement

Based on data obtained from the U.S. Fish and Wildlife Service (Exhibit 3) and published impingement studies using wedge-wire intake

screens, Dr. Masnik concludes that the losses of juvenile and adult shad by impingement due to operation of the Point Pleasant intake would be insignficant and would not jeopardize the continued existence or anticipated gains in population of this species in the Delaware River.

C. Critical Habitat

Based on water quality analyses, hydrology, bathymetry, substrate information and biotic sampling, Dr. Masnik concludes that the Point Pleasant site is not a unique habitat within the Delaware system for any life stages of American shad and, further, that the loss of .05 acres of river bottom would not jeopardize the continued existence of this species.

D. Turbidity

Dr. Masnik testifies that based on the tolerance of American shad eggs and larvae of high levels of suspended solids and the fact that backwashing of the intake screens would cause only a minor increase in suspended solids, the operation of the intake is not expected to adversely affect the Point Pleasant area as a habitat for American shad.

E. Pool Drawdown

Relying on the analysis provided by Mr. Wescott that the water level in the immediate area of the intake structure would be lowered by less than one inch as a result of operation of the intake, Dr. Masnik testifies that the shad fishery in the Delaware River would not be adversely affected by the slight drawdown of the pool formed above the Lumberville wing dam.

3. IMPACTS OF RELOCATING THE INTAKE

Dr. Masnik further concludes that relocation of the intake from its original shoreline position to the present approximate mid-river position would not result in any adverse effects on American shad or shortnose sturgeon populations inhabiting the Delaware River. This conclusion is based on the analyses provided in the answers to Q.8 through Q.15 in Dr. Masnik's testimony.

Mr. Wescott's testimony addresses the drawdown of the pool caused by relocation of the intake.

Relationship between Water Level and River Flow

Mr. Wescott concludes that the water level for the original and present intake locations is approximately the same. Due to the fact that both locations are in the same pool, the relocation has not changed the relationship between water level and river flow at the intake site. Based on his analysis of the rating curve, Mr. Wescott estimates the local water level change due to the withdrawal at Point Pleasant to be less than one inch based on the maximum withdrawal rate and a low flow of 3,000 cfs at the intake site.

III. CONTENTION V-16b

Contention V-16b states:

> "Seepage of water and toxics from Bradshaw Reservoir will cause a risk of contamination and hydraulic saturation"

The Staff is filing two pieces of testimony in response to Contention 16b. John C. Lehr, Senior Environmental Engineer, Environmental Engineering Branch, Division of Engineering, Office of Nuclear

Reactor Regulation, has addressed the quality of Delaware River water in the vicinity of the proposed Pt. Pleasant intake. The purpose of his testimony is to respond to that portion of the contention which alleges that water coming into the Bradshaw contains toxics. Mr. Lehr has evaluated the studies conducted by the Applicant and published in its Limerick EROL and other studies of the water quality of the Delaware River. Lehr Testimony, at 2-5. Mr. Lehr has independently reviewed other water quality data made available to him against criteria published by the Environmental Protection Agency (EPA) pursuant to its statutory obligations under the relevant Acts which it administers and by the Commonwealth of Pennsylvania Department of Environmental Resources and the Delaware River Basin Commission, where relevant. Testimony, at 5-14. Based on his review of studies done by others and his independent assessment of more recent data, Mr. Lehr concludes that the water quality of the Delaware River in the vicinity of the proposed intake is good. Testimony, at 14.

Rex G. Wescott, Hydrologist in the Division of Engineering, Nuclear Reactor Regulation, has prepared testimony whose purpose is to respond to the part of Contention V-16b alleging that water seeping from the reservoir will contaminate the groundwater. Mr. Wescott has reviewed seepage calculations submitted by the Applicant and has performed calculations of his own (Wescott Testimony, at 2-3) and has concluded that even though seepage might result in a rise in groundwater level adjacent to the reservoir, (Testimony, at 3-4) nearby wells would not be affected, as they are upgradient of the direction of any seepage

anticipated from the reservoir, (Testimony, at 4) as shown on the maps attached as an exhibit to Mr. Wescott's testimony. (Wescott Exhibit 1.)

Respectfully submitted,

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Dated at Bethesda, Maryland
this 20th day of September 1982

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NUCLEAR REGULATORY COMMISSION

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CERTIFICATE OF SERVICE

I hereby certify that copies of testimony and trial brief of NRC Staff in the above captioned proceeding have been served this date in-hand on the persons identified below by an asterisk. Service will be made upon the remaining persons by deposit in the United States mail, first class, or as indicated by double asterisk through deposit in the Nuclear Regulatory Commission's internal mail system on September 21, 1982:

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