



Wisconsin Electric POWER COMPANY
231 W. MICHIGAN, P.O. BOX 2046, MILWAUKEE, WI 53201

August 22, 1979

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. NUCLEAR REGULATORY COMMISSION
Washington, D. C. 20555

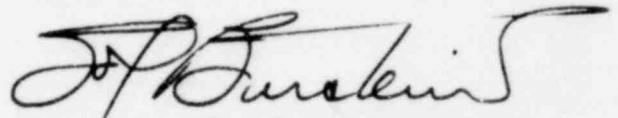
Attention: Mr. A. Schwencer, Chief
Operating Reactors Branch 1

Gentlemen:

DOCKET NOS. 50-266 AND 50-301
NON-RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE PROGRAM
POINT BEACH NUCLEAR PLANT, UNIT NOS. 1 AND 2

This is to respond to your request of June 22, 1979, for additional information regarding changes to the Non-Radiological Environmental Surveillance Program for Point Beach Nuclear Plant. Three (3) signed originals and forty (40) copies of our responses are enclosed.

Very truly yours,


Executive Vice President

Sol Burstein

Enclosures

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2164 338

ENCLOSURE

DOCKET NOS. 50-266 AND 50-301
POINT BEACH NUCLEAR PLANT, UNIT NOS. 1 AND 2

WISCONSIN ELECTRIC POWER COMPANY

RESPONSE

TO

NUCLEAR REGULATORY COMMISSION

REQUEST FOR ADDITIONAL INFORMATION
REGARDING CHANGES TO
NON-RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE PROGRAM
DATED JUNE 22, 1979

AUGUST, 1979

2164 339

NRC QUESTION 1.a (NRC Letter dated June 22, 1979)

NRC learned through the State of Wisconsin Department of Natural Resources that WEPCO plans to redesign and modify the offshore intake crib for the purposes of alleviating icing problems. Our review of the five-year operational monitoring program conducted at Point Beach will include an evaluation of the planned modifications. NRC will need the following information relevant to the intake modifications to complete the review:

- (a) Detailed plans and design information on the new intake crib, to include drawings, differences from the present intake crib, and the estimated intake velocities under normal and maximum water withdrawal conditions.

RESPONSE

The purpose of the modification is to eliminate periodic intake freezing due to frazil ice accumulation. The modification of the intake crib includes installation of up to four 8-foot square, horizontal conduits near the bottom of the crib at 90 degree intervals around the crib. The initial modification involves installation of two conduits in the south portion of the crib. If operating experience indicates that two conduits are not sufficient for preventing intake freezing, two conduits will be installed in the north portion of the crib. A sketch of the intake modification is attached. The present intake structure is detailed in Sargent and Lundy drawings B-3 and B-105, attached. The modification will not change the basic configuration of the intake crib except that 30-inch feeder pipes will be removed as necessary to accommodate installation of the conduits. The original rock will be placed around and above the new conduits. Detailed design of the conduit inlet configuration has not been completed pending investigation of the optimum inlet shape to prevent frazil ice accumulation.

Water intake velocities subsequent to the modifications are expected to be less than those with the existing intake. The maximum circulating water flow occurs during normal operation with four circulating water pumps in operation. In 1972,

over 100 velocity measurements were made around the face of the existing intake crib and about three feet from the face of the crib. The measured velocities ranged from about 0.2 to 0.7 feet per second with an average of about 0.4 feet per second. The higher velocities were generally detected near the 30-inch feeder pipes located around the intake near the lake bottom. The installation of eight-foot conduits would increase the effective open area of the crib by about 10 percent and 20 percent for two and four conduits, respectively. Thus, a decrease in intake approach velocity would be expected with installation of the eight-foot conduits.

2164 341



SUBJECT INSTALL 4 8' DIA. PIPES
IN CRIB

MADE BY ALP

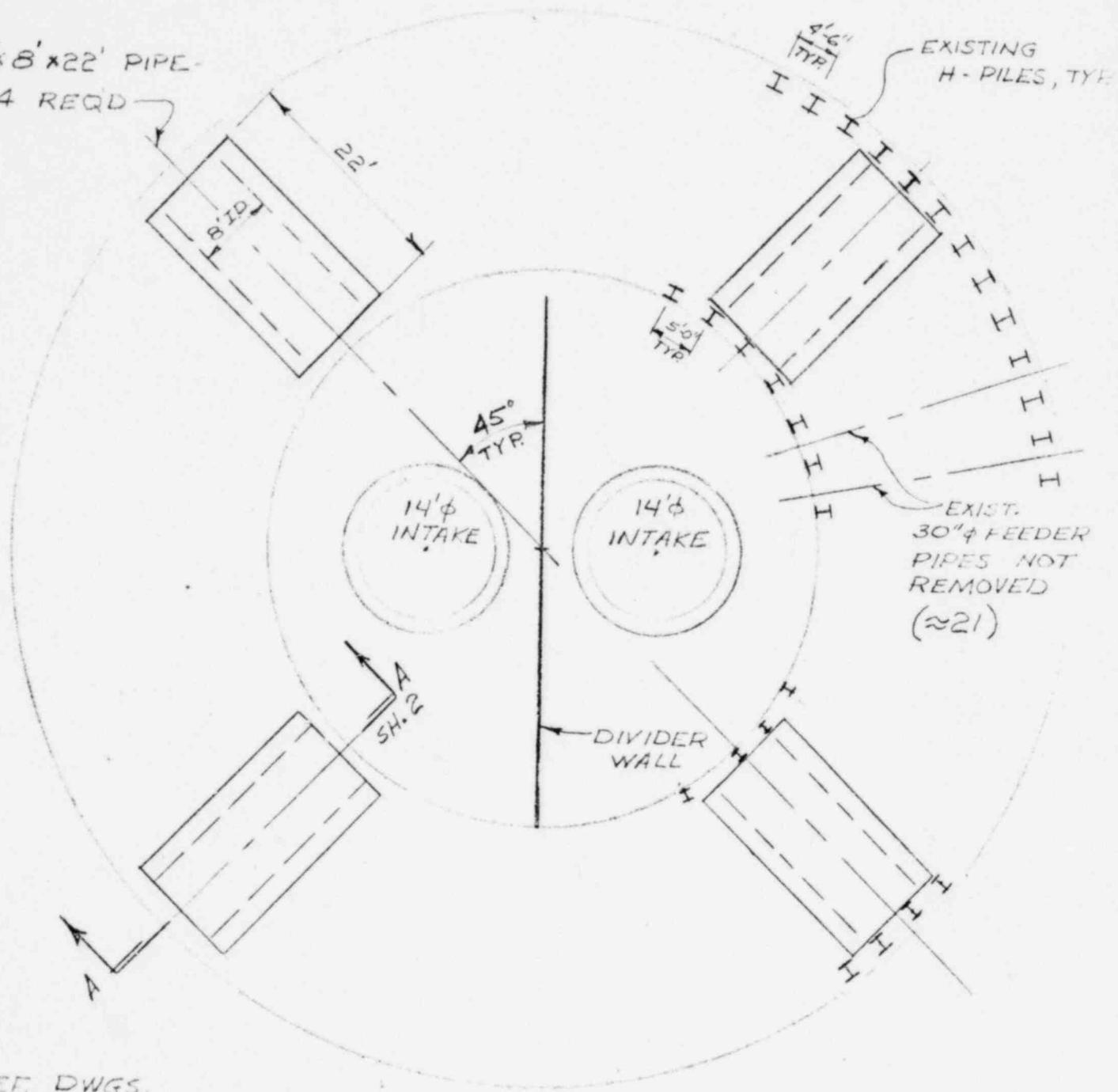
DATE 5-5-78

CHKD. BY _____

DATE _____



8'x8'x22' PIPE -
4 REQD



REF. DWGS.

- S&L B-3
- S&L B-105

PLAN
POINT BEACH INTAKE
1/16" = 1'-0"

POOR ORIGINAL

2164 342

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2164 344

NRC QUESTION 1.b (NRC Letter dated June 22, 1979)

(b) The schedule of construction activities at the intake crib.

RESPONSE

The installation of two 8-foot conduits is presently planned for 1980, with installation to be completed prior to the winter season. If additional conduits are necessary, these would be installed in 1981.

2164 345

NRC QUESTION 1.c (NRC Letter dated June 22, 1979)

- (c) The basis for changing the intake crib design and operation, along with an assessment of the impacts associated with construction and operation of the new crib.

RESPONSE

Winter icing problems with the existing intake have occurred since initial startup in 1970. The cause of these problems has been frazil ice collecting on crib surfaces with subsequent partial or total blockage of the intake. When this occurs, plant output is severely limited and shutdowns have occurred on several occasions. The past two winter seasons have been particularly severe in the Upper Great Lakes Region and the existing intake has experienced severe icing.

In order to minimize the potential for intake icing, a review of possible intake modifications was conducted. These potential modifications ranged from construction of separate intakes for winter operation to means for establishing a basin of relatively still water around the crib. Based on an evaluation of costs, schedules, environmental impact and operational problems, the proposed modifications were determined to be the most desirable.

Construction impacts during the modification are expected to be insignificant since construction activities will be limited to the existing structure. The rock removed for placement of the conduits will be temporarily stored on adjacent portions of the structure. The conduits will be precast on shore and will be transported to the intake by barge. The partial dismantling, rock removal, conduit placement and reassembly will be by barge-mounted crane. There will be no significant disturbance of the lake bottom around the intake.

It is expected that intake impacts during operation will be less than with the existing intake since approach velocities are expected to be reduced during the

period of maximum fish density (summer months) and removeable fish screens of the same size presently used for the feeder pipes will be used over the large openings. The modifications were discussed with the Wisconsin Department of Natural Resources (DNR) and it was agreed that impingement losses should potentially be reduced with the lower approach velocities.

2164 347

NRC QUESTION 1.d (NRC Letter dated June 22, 1979)

- (d) A description of the monitoring programs which will be undertaken to assess the impacts of construction and operation of the new crib.

RESPONSE

In 1978 the DNR determined that, based upon the results of a one-year intensive monitoring program, the total entrainment by the existing intake seems to be insignificant and the impingement impact is clearly insignificant⁽¹⁾.

During discussions with the DNR concerning the modifications, it was reasoned that, since the approach velocities with the modified intake will be lower than with the existing intake, there should be no need to conduct additional biological monitoring programs. However, the DNR suggested that velocity measurements near the intake structure be taken after modifications have been completed to verify that velocities have been reduced. This program will be conducted.

2164 348

(1) Letter to N. A. Ricci, Wisconsin Electric Power Company from T. A. Kroehn, Administrator, Wisconsin Department of Natural Resources, February 8, 1978.

NRC QUESTION 2.a (NRC Letter dated June 22, 1979)

Examination of the impingement data at Point Beach revealed that large specimens of several fish species have been impinged, some on a regular basis. Specimens as large as a 31 inch, 13.75 pound lake trout have been recorded in impingement samples. This is puzzling in view of the fact that the offshore intake crib supposedly is designed with 1 3/16" x 2" bar grating on the intake ports to prevent large fish and debris from entering the structure. Discussions with Wisconsin DNR revealed that this phenomena is probably the result of large spaces between the rocks in the intake crib. This design and impingement impact potential is not specified in the FES and apparently is an unreviewed item by NRC. This design would appear to defeat the purpose of the bar gratings. In order to complete the analysis of the five-year operational monitoring program, NRC will need the following information:

- (a) A description of the intake crib structure to include the sizes and extent of the spaces between the rocks through which large fishes pass and subsequently become impinged.

RESPONSE

As shown in the drawing provided in the response to Question 1.a, the intake structure is constructed by placement of large stone blocks between concentric rings of steel piling. Since initial operation, the intake structure has been regularly inspected for signs of failure, shifting stone and ice damage. During these inspections, several instances of openings of approximately one square foot have been noted between the stone blocks. However, these openings would extend through the crib only as far as the next blocks. Since the thickness of the stone section is approximately 25 feet, a large fish attempting to enter the intake would be forced to take a very irregular path. During the most recent inspection, a larger opening was found which is believed to have been caused by severe winter storms. This opening will be repaired during the intake modifications. It is possible that some fish have entered the intake through the larger opening recently identified.

2164 349

NRC QUESTION 2.b (NRC Letter dated June 22, 1979)

(b) An analysis of the extent to which impingement would be reduced by plugging the spaces between the rocks and therefore water only through the bar grated intake ports.

RESPONSE

If the spaces between the rocks are plugged, approach velocities would nearly double since water also flows into the intake through the rock portion. While this approach would minimize the potential for large fish entering the intake, it is likely that total impingement losses for small fish would increase due to the higher velocities at the surface of the intake.

The DNR, based on results of a one-year intensive study, stated that "Alewife and smelt comprised 98 percent of the estimated annual impingement by weight. Impingement of trout and salmon at Point Beach represents a loss to creel of about 56 salmonids annually. In 1973, 2000 salmonids were caught from the fishing platform located over the Unit 1 discharge. The entrapment impact of the intake structure on Lake Michigan biological populations is clearly insignificant." This conclusion is consistent with the results of five years' intensive study in accordance with Appendix B of the Point Beach Nuclear Plant Technical Specifications. There is no basis for concern over entrapment via openings in the rocks.

2164 350

NRC QUESTION 3 (NRC Letter dated June 22, 1979)

During the first year of impingement monitoring (1973) WEPCO recognized that collecting impingement samples with a 3/4 inch mesh sluiceway basket allowed many impinged small fishes to pass through the basket unrecorded. This was due to the smaller mesh size (3/8 inch) of the traveling screens which caught small fishes. This discrepancy in sampling techniques was recognized by licensee early in the five-year program and by NRC which requested the use of a 3/8 inch mesh sluiceway basket for sampling impinged fishes. A 3/8 inch mesh basket was not used on a full-time basis until the fifth and final year of impingement sampling. As a result, the first four years of sampling could have greatly underestimated the true impingement of fishes at Point Beach. In a letter dated October 14, 1976 from WEPCO to NRC, licensee committed to adjust the first four years of impingement data to estimate what impingement losses would have been if the proper mesh size (3/8 inch) collection basket had been used. Licensee also committed to provide this analysis in the five year summary report which was submitted to NRC in 1978. The report did not contain the analysis. Therefore provide the statistical adjustment of the first four years of impingement data, as requested by NRC.

RESPONSE

The adjusted data were inadvertently omitted from the five-year summary report.

Impingement estimates for the period November, 1972 through October, 1976, have been adjusted to account for the difference in basket mesh size employed during the fifth year. Traveling screen monitoring results from the first four years have been compared to traveling screen monitoring results obtained from a comprehensive one-year program conducted in 1975-1976 in accordance with requirements of the Licensee's WPDES permit. During this program, sampling was conducted once every four days using a 3/8 inch mesh collection basket. This sampling was more frequent than that conducted during the fifth year of the Non-Radiological Environmental Surveillance Program and thus was more appropriate for adjustment of previous results.

For simplification, impinged fish were divided into groups, as follows: trout and salmon, rough (suckers and carp) and forage (sculpin, stickleback, cyprinids, shad). Alewife, rainbow smelt and yellow perch were compared separately. The original and adjusted results by year are listed in the attached Table 1. It is probable that alewife, smelt and forage fish impingement losses were

underestimated during the first four years of the program. However, the annual impingement estimates for the larger fish such as trout, salmon, sucker, carp and yellow perch are reasonable since they compared closely with the results of the one-year comprehensive program and the difference in mesh size would not be expected to affect retention of larger fishes.

The low estimates of alewife, smelt and forage fishes have been replaced with estimates derived from the one-year comprehensive program. While impingement losses of a few species may have been underestimated during the first four years of the program, these losses are ecologically insignificant when compared to the population levels present in Lake Michigan, particularly in the case of alewife and smelt.

2164 352

TABLE 1

ORIGINAL AND ADJUSTED FISH IMPINGEMENT DATA (NUMBER)
NOVEMBER 1972 THROUGH OCTOBER 1976

<u>TAXA/GROUP</u>	<u>MAY 1973 - OCT. 1974</u>		<u>NOV. 1973 - OCT. 1974</u>		<u>NOV. 1974 - OCT. 1975</u>		<u>NOV. 1975 - OCT. 1976</u>		<u>ONE YEAR COMPREHENSIVE PROGRAM MAR. 1975 - FEB. 1976</u>
	<u>Original</u>	<u>Adjusted</u>	<u>Original</u>	<u>Adjusted</u>	<u>Original</u>	<u>Adjusted</u>	<u>Original</u>	<u>Adjusted</u>	
Alewife	267,000	886,000	202,000	886,000	663,000	886,000	2,002,000	2,002,000	886,000
Smelt	30,400	161,000	2,500	161,000	18,600	161,000	20,000	161,000	161,000
Yellow perch	900	900	140	140	140	140	60	60	270
Trout and Salmon (a)	50	50	120	120	260	260	350	350	470
Forage (b)	60	7,300	40	7,300	2,400	7,300	5,900	7,300	7,300
Rough (c)	180	180	120	120	100	100	100	100	200

NOTES: (a) Group consists of rainbow, brown, tiger, brook and lake trouts plus coho and chinook salmon.

(b) Group consists of slimy sculpin, trout perch, ninespine stickleback, longnose dace, spottail shiner and other members of the cyprinid family which were infrequently encountered.

(c) Group consists of white sucker, carp and longnose sucker.

2164 553

NRC QUESTION 4 (NRC Letter dated June 22, 1979)

During the five-year study period, some species of cisco (*Coregonus*) considered to be endangered within Wisconsin were captured by gill net at Point Beach. In response to inquiries by NRC, licensee stated that it was probable that the fishes had been misidentified. In a letter dated August 19, 1976 from WEPCO to NRC, licensee stated that the misidentification problem would be rectified and that all cisco of questionable identity from both impingement samples and lake samples would be verified by the U. S. Fish and Wildlife Service. However, the results of the 1976-77 sampling program reported 3 coregonids collected by seine and an estimated 442 impinged, all identified only to the genus level as in previous annual reports. Provide the requested information on the identification of the coregonids captured by seine and impingement during 1976-77.

RESPONSE

All of the coregonid specimens collected (3 by seine, 21 in fish impingement samples collected in October 1977) were approximately 3 inches (75 mm) in total length. Conversations between our staff and Mr. Thomas Todd of the U. S. Fish and Wildlife Service in Ann Arbor, Michigan have revealed the futility of any further attempts at identification since the staff at the Fish and Wildlife Service is unable to identify beyond genus level, and is unaware of anyone who is able to so identify, juvenile coregonids. Although no positive identification can be made, the individuals in question were probably bloaters (*Coregonus hoyi*) based on available chub population figures.

2164 354

NRC QUESTION 5 (NRC Letter dated June 22, 1979)

In view of items 1, 2, and 3 above, indicate why intake and lake sampling should not be continued in order to provide accurate and quantitative data on the impacts of water withdrawal to Lake Michigan fishes in the Point Beach area.

RESPONSE

The accuracy of the data collected during five years of intensive monitoring of the intake at Point Beach and Lake Michigan in the Point Beach area is documented in the annual reports submitted to the NRC and is not affected by items 1 and 2. Item 3 addresses an adjustment of certain impingement data based on a change in sampling technique during the fifth year of the intensive monitoring. Additional data from a separate one-year study are also provided and confirm that Point Beach impingement losses are insignificant. The DNR, based upon a review of the latter program, also concluded that impingement losses at Point Beach are insignificant.

The proposed modifications to the intake crib, addressed in item 1, will reduce the velocity at the intake. Thus, it is reasonable to conclude that impingement losses are likely to decrease with the modifications in place. This conclusion is also shared by the DNR, based on discussions with that agency. There is no basis for requiring continued lake and intake monitoring.

2164 355