

Attachment 1

Zion Station Units 1 and 2  
NRC Docket Nos. 50-295 and 50-304

Proposed Technical Specification Change  
to  
Appendix B, Environmental Technical Specifications

The following page has been revised:

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ENVIRONMENTAL PROTECTION CONDITIONS

1.3 CHEMICAL EFFLUENTS (Cont'd)

C. The pH of all effluents discharged into the condenser cooling water system shall be in accordance with the National Pollutant Discharge Elimination System (NPDES) Permit.

D. Sanitary Wastes

All sanitary wastes are discharged to the North Shore Sanitary District for treatment.

MONITORING REQUIREMENTS

2.3 CHEMICAL EFFLUENTS (Cont'd)

B.2 (a) The results of the monitoring program under Section 2.3.B.1(a) above shall be reported in accordance with Section 3.0. If the discharge of a chemical is greater than that addressed in the FES or subsequent NRC Environmental Impact Appraisals, an evaluation of the environmental impact of the discharge shall be included in the annual report.

B.2 (b) The information documented in the monitoring program in Section 2.3.B.1 (b) above will be maintained in station records and reported with evaluations provided in the annual report as required by Section 2.3.B.2(a) above.

C. pH measurements shall be made as required to insure compliance with 1.3.C.

D. N.A.

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\*Not Applicable

A study (Intake-Discharge study) was conducted from July, 1973 through June, 1977, as part of the environmental program associated with Appendix B of the ETS.<sup>1/</sup> The main purpose of the study was to document the quality of the water entering the station's intake and exiting through the discharges.

Specifically, replicate 24-hour composite samples were collected monthly and analyzed for water quality constituents including pH. The sampling for pH began in January, 1974 and ended June, 1977. The data relating to the intake are included in Exhibit A. Results indicate that the pH was 8.0 or higher for the majority of the samples (71% - 58 out of 82 samples) with a range of 7.2 to 8.4. Consequently, the natural occurring pH of Lake Michigan water near Zion Station is greater than 8.0 most of the time.

This conclusion is also supported by the field chemistry studies which were conducted in fulfillment of Appendix B requirements. As an example, Exhibit B summarizes the monthly pH measurements taken from May, 1971 through September, 1978, along the nine meter depth contour.<sup>2/</sup> This depth contour included two control transects (North and South Control) and two transects within the predicted area of thermal influence. As stated in the report, pH was more variable during 1971 and 1972 than in later studies. This was related to analytical variability and not to natural variability of Lake Michigan water. After 1972, the pH was consistently above 8.0.

In summary, water quality data indicates the natural occurring pH of Lake Michigan water near Zion Station is greater than 8.0 most of the time.

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<sup>1/</sup> Ellis, David B. 1977. Intake-Discharge Chemistry Summary Report. July, 1973 through June, 1977. Report to Commonwealth Edison Company, Chicago, Illinois, by NALCO Environmental Sciences. 301 p.

<sup>2/</sup> Shipley, Gayle L. 1979. Water Quality Studies. IN Environmental Monitoring in Lake Michigan near Zion Station. January, 1970 through September, 1978. Summary Report to Commonwealth Edison Company, Chicago, Illinois, by Hazleton Environmental Sciences. p. 105-141.

NALCO ENVIRONMENTAL SCIENCES

EXHIBIT A

Table A-34. Values of pH from 24-hour composite samplings taken during the intake-discharge study, Zion Station, January 1974 through June 1977.

PH

SAMPLING DATE	REPLICATE	COMPOSITE SAMPLING LOCATIONS		
		INTAKE	DISCHARGE UNIT 1	DISCHARGE UNIT 2
JAN 28, 1974	A	8.0	8	8.1
	B	8.1	8	8.1
FEB 27, 1974	A	8.2	8	8.2
	B	8.2	8	8.1
MAR 30, 1974	A	7.9	8	8.2
	B	7.9	8	8.2
APR 30, 1974	A	8.1	8.2	8
	B	8.2	8.2	8
MAY 7, 1974	A	8.1	8.2	8
	B	8.2	8.2	8
JUN 21, 1974	A	8.2	8.1	8
	B	8.2	8.2	8
JUL 24, 1974	A	8.2	8.3	8.1
	B	8.2	8.3	8.3
AUG 7, 1974	A	7.9	8.1	8.2
	B	8.0	8.0	8.2
SEP 14, 1974	A	8.2	8.2	8.2
	B	8.2	8.2	8.2
OCT 15, 1974	A	7.5	7.3	7.3
	B	7.3	7.2	7.3
NOV 23, 1974	A	7.3	7.4	7.3
	B	7.2	7.3	7.3
DEC 5, 1974	A	8.0	7.9	8.0
	B	7.8	8.0	7.9
JAN 29, 1975	A	7.8	7.6	7.8
	B	7.8	7.6	7.7
FEB 25, 1975	A	7.7	7.7	7.9
	B	7.6	7.9	7.8
MAR 31, 1975	A	8.1	7.3	8.2
	B	8.1	7.3	8.2
APR 8, 1975	A	7.9	8.1	8.0
	B	7.9	8.1	8.1
MAY 13, 1975	A	8.4	8.4	8.4
	B	8.4	8.4	8.4
JUN 30, 1975	A	8.1	8.1	8.1
	B	8.1	8.0	8.0
JUL 15, 1975	A	8.0	8.0	8.0
	B	8.0	8.0	8.1
AUG 15, 1975	A	8.0	8.0	8.0
	B	8.0	8.0	8.1
SEP 4, 1975	A	8.4	8.4	8.3
	B	8.4	8.4	8.3
OCT 21, 1975	A	8.2	8.2	8.0
	B	8.2	8.2	8.0
NOV 12, 1975	A	8.1	8.1	8.1
	B	8.1	8.1	8.1
DEC 9, 1975	A	7.9	7.9	7.9
	B	7.9	7.9	7.9

POOR ORIGINAL

From: Intake-Discharge Chemistry Summary Report, July, 1973 through June, 1977. Report to Commonwealth Edison Company, Chicago, Illinois, by NALCO Environmental Sciences.

NALCO ENVIRONMENTAL SCIENCES

Table A-34. (continued)

PH

SAMPLING DATE	REPLICATE	COMPOSITE SAMPLING LOCATIONS		
		INTAKE	DISCHARGE UNIT 1	DISCHARGE UNIT 2
JAN 13, 1976	A	8.2	8.1	8.1
	B	8.1	8.1	8.1
FEB 3, 1976	A	8.2	8.0	b
	B	8.2	8.0	b
MAR 12, 1976	A	8.2	b	8.2
	B	8.2	b	8.2
APR 27, 1976	A	7.7	b	8.0
	B	7.9	b	8.3
MAY 12, 1976	A	8.1	8.1	8.0
	B	8.1	8.0	8.0
JUN 15, 1976	A	8.1	b	7.9
	B	8.1	b	7.9
JUL 16, 1976	A	7.9	7.8	c
	B	7.9	7.6	c
SEP 28, 1976	A	8.2	8.3	c
	B	8.1	8.3	c
OCT 28, 1976	A	7.9	8.2	8.2
	B	7.9	8.2	8.2
NOV 19, 1976	A	8.2	8.4	8.3
	B	8.3	8.4	8.3
DEC 7, 1976	A	8.1	8.1	8.1
	B	8.1	8.1	8.1
JAN 11, 1977	A	8.1	8.0	d
	B	8.1	8.0	d
FEB 17, 1977	A	8.2	8.2	d
	B	8.2	8.2	d
MAR 23, 1977	A	8.2	e	e
	B	8.1	e	e
APR 26, 1977	A	8.3	7.6	8.2
	B	8.3	7.5	8.2
MAY 25, 1977	A	8.2	8.2	8.2
	B	8.2	8.2	8.2
JUN 1, 1977	A	7.8	7.7	8.1
	B	7.7	7.9	8.1

<sup>a</sup>Missing data are explained in Heath and Hawley 1974.

<sup>b</sup>Missing data are explained in Larker 1976.

<sup>c</sup>Missing data are explained in NALCO Environmental Sciences 1977.

<sup>d</sup>There were no circulating water pumps operating at Discharge Unit 2.

<sup>e</sup>Composite sampler malfunction. The samplers were not able to be repaired until after the end of March.

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POOR ORIGINAL

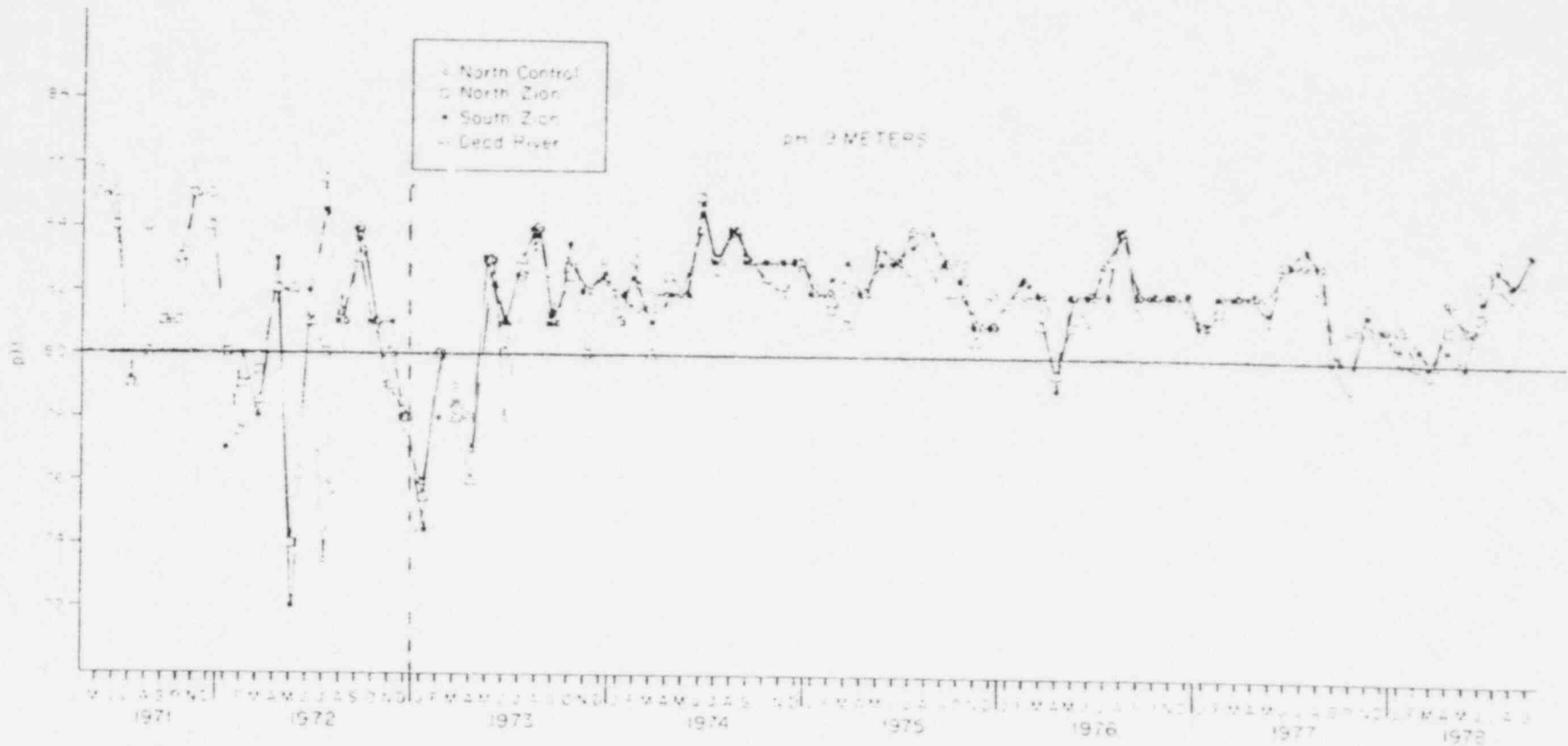


Figure 2. Values of pH along the 9 meter depth contour in Lake Michigan, 1971 through 1978.

From: Water Quality Studies. IN Environmental Monitoring in Lake Michigan near Zion Station. January, 1970 through September, 1978. Summary Report to Commonwealth Edison Company; Chicago, Illinois, by Hazleton Environmental Sciences. p. 127.