Nebraska Public Power District

Cooper Nuclear Station

Annual Environmental Operating Report
Volume I — Nonradiological

January 1, 1981 — December 31, 1981

USNRC Docket Number 50-298

Nebraska Public Power District

GENERAL OFFICE
P.O. BOX 499, COLUMBUS, NEBRASKA 68601-0499
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LQA8200106

March 18, 1982

Mr. John T. Collins
Regional Administrator
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76011

Subject: Annual Environmental Operating Report
Volume I - Nonradiological
Cooper Nuclear Station
NRC Docket No. 50-298, DPR-46

Dear Mr. Collins:

In accordance with Paragraph 5.4.1.a(1) of the Cooper Nuclear Station Technical Specifications, the Nebraska Public Power District submits the Cooper Nuclear Station Annual Environmental Operating Report Volume 1 - Nonradiological for the period January 1, 1981 through December 31, 1981.

We are enclosing one signed original of the report for your use and are transmitting 18 copies to the Document Control Desk in accordance with Regulatory Guide 10.1, Revision 4.

Should you have any questions or comments regarding this report, please contact me.

Sincerely,

Jay M. Pilant
Division Manager of Licensing
and Quality Assurance

JMP:ACM:cmk

Enclosure

cc: Document Control Desk w/18 copies
U.S. Nuclear Regulatory Commission
Washington, DC 20555

STATE OF NEBRASKA)
) ss
PLATTE COUNTY)

Jay M. Pilant, being first duly sworn, deposes and says that he is an authorized representative of the Nebraska Public Power District, a public corporation and political subdivision of the State of Nebraska; that he is duly authorized to submit this information on behalf of Nebraska Public Power District; and that the statements in said application are true to the best of his knowledge and belief.

Jay M. Pilant

Subscribed in my presence and sworn to before me this 18th day of March, 1982.

Colleen M. Kuta
NOTARY PUBLIC

COLLEEN M. KUTA
GENERAL
NOTARY
COMMISSION
EXPIRES
AUG. 4, 1985
STATE OF NEBRASKA

Nebraska Public Power District

COOPER NUCLEAR STATION

ANNUAL ENVIRONMENTAL OPERATING REPORT

Volume I - Nonradiological

USNRC Docket 50-298

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ENVIRONMENTAL PROTECTION CONDITION

2.0 ENVIRONMENTAL PROTECTION CONDITION

Requirements of 2.3 (Chemical Analyses and Chemical Use Report) have been met as demonstrated by Table 1, and the following summary.

2.3 Chemical

Chemical Analyses

River water samples were collected by plant personnel and analyzed monthly from January through December at the river water intake structure and the discharge canal of Cooper Nuclear Station.

Analyses for turbidity, specific conductance, chlorine, copper, iron, potassium, sodium, and pH were conducted by plant personnel as specified in the Cooper Nuclear Station Environmental Technical Specifications (ETS). Turbidity and specific conductance values in the discharge canal were within the ETS limitations of less than 10% greater than the inlet values.

Total chlorine concentration in the discharge canal was less than 0.02 mg/l and, therefore, did not exceed the ETS maximum criterion of 0.1 mg/l.

Concentrations of copper, iron, potassium, and sodium in the discharge canal did not indicate any substantial increase due to plant operation.

The analyses for pH at the inlet and the discharge canal were well within the ETS limitations of 6.5 to 9.0 pH.

The limitations of the above mentioned parameters were not exceeded; therefore, there has not been any significant chemical effect on the Missouri River water due to station operation in 1981.

TABLE 1

SEMIANNUAL BULK CHEMICAL USE REPORT

January 6, 1981 to July 6, 1981

CHEMICAL	PREVIOUS INVENTORY	RECEIVED	PRESENT INVENTORY	USED
Sulfuric Acid	6550 gal.	6022 gal.	6000 gal.	6572 gal.
Sodium Hydroxide	6600 gal.	6896 gal.	3550 gal.	9946 gal.
Bulk Lime	60[illegible] .	81940 lbs.	56000 lbs.	35940 lbs.
Calcium Hypochlorite	5[illegible] lbs.	Ø	165 lbs.	155 lbs.
Alkameen	85 gal.	Ø	80 gal.	5 gal.
Dearborn 253 AF	306 lbs.	Ø	291 lbs.	15 lbs
Dearborn 521	47 gal.	Ø	47 gal.	Ø
Dearborn 713	80 gal.	Ø	80 gal.	Ø
Dearborn 922	2 gal.	Ø	2 gal.	Ø
Nalcolyte 8103	150 gal.	Ø	80 gal.	70 gal.
Sodium Sulfite	160 lbs.	100 lbs.	225 lbs.	35 lbs.
Sodium Nitrite	900 lbs.	Ø	* 176 lbs.	Ø
Dearborn Sludge-trol-600	26 gal.	Ø	24 gal.	2 gal.

* Shipped 724 lbs. to another NPPD facility.

TABLE 1 (Cont'd.)

SEMIANNUAL BULK CHEMICAL USE REPORT

July 6, 1981 to January 5, 1982

CHEMICAL	PREVIOUS INVENTORY	RECEIVED	PRESENT INVENTORY	USED
Sulfuric Acid	6000 gal.	9295 gal.	7450 gal.	7845 gal.
Sodium Hydroxide	3550 gal.	12983 gal.	6300 gal.	10233 gal.
Bulk Lime	56000 lbs.	84160 lbs.	44000 lbs.	96160 lbs.
Calcium Hypochlorite	165 lbs.	600 lbs.	470 lbs.	295 lbs.
Alkameen	80 gal.	Ø	75 gal.	5 gal.
Dearborn 253 AF	291 lbs.	Ø	286 lbs.	5 lbs.
Dearborn 521	47 gal.	Ø	47 gal.	Ø
Dearborn 713	80 gal.	Ø	79 gal.	1 gal.
Dearborn 922	2 gal.	Ø	2 gal.	Ø
Nalcolyte 8103	80 gal.	165 gal.	190 gal.	55 gal.
Sodium Sulfite	225 lbs.	Ø	120 lbs.	105 lbs.
Sodium Nitrite	176 lbs.	Ø	176 lbs.	Ø
Dearborn Sludge-trol-600	24 gal.	Ø	23 gal.	1 gal.

Section II
Technical Specification 4.0
ENVIRONMENTAL SURVEILLANCE
AND
SPECIAL STUDIES

4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

Requirements of 4.1.1.2 (Plant Cooling Water Systems Fish Entrapment) have been met as demonstrated by Tables 1-4 and the following summary.

4.1.1.2 Plant Cooling Water Systems Fish Entrapment Limits

Samples of fish impinged on the traveling screens were collected in accordance with the Environmental Technical Specifications (ETS). Sampling was conducted hourly at least twice per month with the July, August, and September collections being performed during hours of darkness.

A total of 287 fish, representing 14 taxa, were collected during 29 hourly collection periods in 1981 (Table 1). Monthly impingement rates ranged from 0 to 24 fish/hr. with higher rates coinciding with the occurrence of young-of-the-year gizzard shad and freshwater drum.

The most common species impinged were gizzard shad, freshwater drum, river carpsucker, and carp which collectively comprised 91.6% of the total. Game fish including sauger, white bass, white crappie, catfish, and bluegill comprised only 2.4% of the fish impinged. Species composition and relative abundance of fish impinged in 1981 were similar to those in previous years (Table 2).

As in previous years, diurnal rates were lower than nocturnal rates (Table 3). Peak impingement of 54 fish/hr. occurred during a nocturnal sampling period in August. This rate was below the 90 fish/hr. limit established by the ETS

Fish impinged on the traveling screens at Cooper Nuclear Station are returned to the river via a continuous wash system. Of the fish impinged during 1981, 45.3% were classified as alive and active (Table 4) and might have survived the impingement process.

Table 1. Monthly summary of fish impinged (total number) at Cooper Nuclear Station, January-December, 1981.

Taxon	Month												Total No.	Percent of Total
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Drum	2	-	1	-	-	5	10	-	4	4	1	2	29	10.1
River carpsucker	4	-	-	2	-	4	9	-	-	-	1	-	20	7.0
Goldeye	1	-	1	-	2	-	3	-	-	-	4	-	11	3.8
Sauger	-	-	1	-	-	-	-	-	-	-	-	-	1	0.3
White bass	-	-	1	-	-	-	-	-	-	-	-	-	1	0.3
White crappie	-	-	1	-	-	-	-	-	-	-	-	-	1	0.3
Gizzard shad	-	-	9	-	2	21	66	44	42	-	11	1	196	68.3
Bigmouth buffalo	-	-	-	-	-	-	2	-	-	-	-	-	2	0.7
Smallmouth buffalo	-	-	-	-	-	-	1	-	-	-	-	-	1	0.3
Catfish	-	-	-	1	-	-	1	1	-	-	-	-	3	1.0
Minnow	-	-	-	-	-	-	2	-	-	-	-	-	2	0.7
Bluegill	-	-	-	-	-	1	-	-	-	-	-	-	1	0.3
Carp	-	-	3	3	-	1	7	2	1	-	-	1	18	6.3
Shortnose gar	-	-	-	-	-	-	-	-	1	-	-	-	1	0.3
TOTAL	7	0	17	6	4	32	101	47	48	4	17	4	287	
No. of Hourly Collections	3	2	2	2	2	2	5	2	2	2	2	3	29	
Mean No./Hr.	2.3	0.0	8.5	3.0	2.0	16.0	20.2	23.5	24.0	2.0	8.0	1.3	9.9	

Table 2. Summary of the relative abundance (%) of fish impinged at Cooper Nuclear Station, 1974-81.

Taxon	Year							
	1974	1975	1976	1977	1978	1979	1980	1981
Shovelnose sturgeon	<0.1	-	0.1	0.2	-	0.4	-	-
Paddlefish	<0.1	0.5	0.1	0.7	-	-	-	-
Longnose gar	<0.1	-	-	0.1	-	-	0.4	-
Shortnose gar	0.6	0.4	0.1	0.4	-	-	0.8	0.6
Unidentified gar	0.1	-	0.1	0.3	-	0.4	-	-
Gizzard shad	66.4	32.7	56.1	41.2	47.0	63.7	35.8	70.7
Goldeye	0.6	1.3	2.8	3.8	1.1	0.7	3.5	3.3
Carp	2.1	4.4	2.5	4.6	6.4	10.7	3.5	4.8
Unidentified minnows	0.9	6.2	3.0	2.6	10.9	0.7	4.3	0.6
River carpsucker	3.3	26.0	10.2	22.3	0.8	1.9	3.5	6.9
White sucker	-	-	0.2	-	-	-	-	-
Blue sucker	-	-	0.4	-	-	-	0.4	-
Bigmouth buffalo	-	1.6	0.3	0.8	0.4	1.1	0.4	0.6
Smallmouth buffalo	1.4	0.5	0.4	0.8	-	0.4	-	0.3
Unidentified buffalo	-	-	0.4	0.1	-	-	-	-
Unidentified suckers	-	-	-	0.2	-	-	-	-
Black bullhead	<0.1	0.5	0.1	0.1	0.8	1.1	0.4	-
Unidentified bullhead	<0.1	1.5	-	0.3	-	-	-	-
Channel catfish	0.4	1.6	2.2	1.1	1.9	0.4	2.3	-
Flathead catfish	0.4	1.9	0.8	1.2	0.4	1.9	1.2	-
Unidentified catfish	-	-	0.2	-	1.5	2.2	1.2	0.9
White bass	1.4	1.6	1.7	1.5	0.8	-	3.9	0.3
Green sunfish	-	0.1	-	-	-	-	-	-
Bluegill	0.4	0.5	0.8	0.5	0.4	-	0.4	0.3
Smallmouth bass	-	-	-	0.1	-	-	-	-
Largemouth bass	0.1	0.1	0.5	0.2	0.8	-	-	-
Crappie (Pomoxis spp.)	0.4	0.9	2.2	0.3	1.1	-	2.7	0.3
Unidentified sunfish	-	-	0.4	-	0.4	0.4	-	-
Sauger	<0.1	0.9	0.5	1.7	0.4	-	0.4	0.3
Freshwater drum	21.2	16.3	14.1	15.0	25.2	14.1	34.6	10.1
Unidentified	-	-	-	0.1	-	-	-	-

Table 3. Number of fish impinged per hour during diurnal and nocturnal sampling periods at Cooper Nuclear Station, January - December 1979.

	Diurnal (0700-1900)			Nocturnal (1900-0700)		
Month	No. of Sample Periods(Hr)	No. of Fish	No./Hr.	No. of Sample Periods(Hr)	No. of Fish	No./Hr.
January	1	2	2.0	2	5	2.5
February	1	0	0.0	1	0	0.0
March	1	8	8.0	1	9	9.0
April	1	6	6.0	1	0	0.0
May	1	3	3.0	1	1	1.0
June	1	26	26.0	1	6	6.0
July	0	-	-	5	101	20.2
August	0	-	-	2	47	23.5
September	0	-	-	2	48	24.0
October	1	0	0.0	1	4	4.0
November	1	15	15.0	1	2	2.0
December	1	3	3.0	2	1	0.5
TOTAL	9	63		20	224	
Mean No./Hr.			7.0			11.2

Table 4. Summary of the physical condition of fish impinged at the intake structure at Cooper Nuclear Station, January-December, 1981.

Species	Alive and Active		Alive and Inactive		Dead With No Physical Damage		Dead With Physical Damage	
	No.	%	No.	%	No.	%	No.	%
Sauger	1	100.0	-	-	-	-	-	-
Shortnosed gar	1	100.0	-	-	-	-	-	-
Gizzard shad	85	43.4	65	33.2	30	15.3	16	8.2
Goldeye	5	45.5	4	36.4	2	18.2	-	-
Carp	6	33.3	8	44.4	3	16.7	1	5.6
Unidentified minnow	-	-	-	-	2	100.0	-	-
River carpsucker	10	50.0	5	25.0	4	20.0	1	5.0
Smallmouth buffalo	1	100.0	-	-	-	-	-	-
Bigmouth buffalo	-	-	2	100.0	-	-	-	-
White bass	1	100.0	-	-	-	-	-	-
White crappie	-	-	1	100.0	-	-	-	-
Unidentified catfish	2	66.7	-	-	1	33.3	-	-
Bluegill	1	100.0	-	-	-	-	-	-
Freshwater drum	17	58.6	9	31.0	2	6.9	1	3.4
TOTAL	130	45.3	94	32.8	44	15.3	19	6.6