

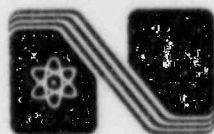
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Nebraska Public Power District  
Cooper Nuclear Station

# Annual Environmental Operating Report Volume I — Nonradiological

Environmental Radiation Monitoring Program  
January 1, 1983 — June 30, 1983

USNRC Docket Number 50-298



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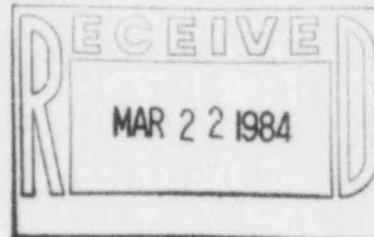
# Nebraska Public Power District

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NLS8400088

March 12, 1984

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:

The requirement for submittal of this report was removed from the Cooper Nuclear Station Environmental Technical Specifications by Amendment No. 81 to Facility Operating License DPR-46 issued on March 11, 1983. Nebraska Public Power District submits the final Cooper Nuclear Station Annual Environmental Operating Report Volume I - Nonradiological for the period January 1, 1983 through June 30, 1983.

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  
Technical Staff Manager  
Nuclear Power Group

JMP:DCL:cmk  
Enclosure

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

Nebraska Public Power District

COOPER NUCLEAR STATION

ANNUAL ENVIRONMENTAL OPERATING REPORT

Volume I - Nonradiological

USNRC Docket 50-298

TABLE OF CONTENTS

	<u>Page</u>
Section I      Technical Specification 2.0	I-1
ENVIRONMENTAL PROTECTION CONDITION	
Section II     Technical Specification 4.0	II-1
ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES	

Section I

Technical Specification 2.0

ENVIRONMENTAL PROTECTION CONDITION

## 2.0 ENVIRONMENTAL PROTECTION CONDITION

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

### 2.3 Chemical Analyses and Chemical Use Report

#### Chemical Analyses

River water samples were collected by plant personnel and analyzed monthly from January through June, 1983. The samples were collected at the intake structure and the discharge canal of Cooper Nuclear Station (CNS).

Analyses for turbidity, specific conductance, chlorine, copper, iron, potassium, sodium, and pH were conducted by plant personnel as specified in the CNS Environmental Technical Specifications (ETS). Turbidity and specific conductance at the discharge were within 10 percent of the inlet values and therefore did not exceed the ETS limitations. Total chlorine in the discharge canal did not exceed the ETS maximum concentration limit of 0.1 mg/l. The pH values ranged from a minimum of 7.1 to a maximum of 8.6. The pH was well within the ETS limitations of 6.5 to 9.0. The concentration of copper, iron, potassium, and sodium in the discharge canal does not indicate any substantial increase due to plant operation.

The limitations of the above-mentioned parameters were not exceeded; therefore, there has been no significant chemical effect on the Missouri River water due to station operation in 1983.

TABLE 1

SEMIANNUAL BULK CHEMICAL USE REPORT

January 18, 1983 to July 28, 1983

CHEMICAL	PREVIOUS INVENTORY	RECEIVED	PRESENT INVENTORY	USED
Sulfuric Acid	4,250 gal.	12,366 gal.	6,000 gal.	10,616 gal.
Sodium Hydroxide	4,600 gal.	13,909 gal.	5,900 gal.	12,609 gal.
Bulk Lime	62,000 lbs.	83,620 lbs.	46,000 lbs.	99,680 lbs.
Calcium Hypochlorite	535 lbs.	0 lbs.	400 lbs.	135 lbs.
Alkameen	65 gal.	0 gal.	62 gal.	3 gal.
Dearborn 253 AF	290 lbs.	0 lbs.	285 lbs.	5 lbs.
Dearborn 521	47 gal.	0 gal.	47 gal.	0 gal.
Dearborn 713	77.5 gal.	0 gal.	77 gal.	0.5 gal.
Nalcolyte 8103	145 gal.	110 gal.	200 gal.	55 gal.
Sodium Sulfite	230 lbs.	0 gal.	220 lbs.	10 lbs.
Sodium Nitrite	171 lbs.	0 lbs.	171 lbs.	0 lbs.
Dearborn Sludge-trol-600	21 gal.	0 gal.	21 gal.	0 gal.
Tri Sodium Phosphate	50 lbs.	400 lbs.	280 lbs.	170 lbs.
Dearborn 66	110 lbs.	100 lbs.	40 lbs.	170 lbs.

Section II  
Technical Specification 4.0  
ENVIRONMENTAL SURVEILLANCE  
AND  
SPECIAL STUDIES



#### 4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

Requirements of Cooper Nuclear Station ETS paragraph 4.1.1.2 (Plant Cooling Water System Fish Entrapment) have been met as demonstrated by Tables 1 through 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 ETS. Sampling was conducted hourly at least twice per month.

During the January-June, 1983 impingement sampling (13 hourly periods), 36 fish representing 10 species were collected (Table 1). Monthly impingement rates ranged from an average of 1.5 (February and March) to 5.5 (May) fish per hour.

Predominant fishes impinged, in order of decreasing magnitude, included gizzard shad, smallmouth buffalo and bigmouth buffalo. These three species represented 69.4 percent of the total fish impinged. Game species including largemouth bass, channel catfish, flathead catfish, and white perch, comprised only 16.8 percent of the impinged fish. Species composition and relative abundance of fish impinged during the 1983 sampling were somewhat similar to those of previous years (Table 2). Some differences exist because this report covers only the first half of 1983.

Seven of the 13 impingement sampling periods were during periods of darkness (1900-0700 hours). The nocturnal impingement rate averaged 2.7 fish/hour while the diurnal impingement rate averaged 2.8 fish/hour during six sample periods (Table 3).

The rate of impingement at CNS during 1983 did not vary much. The rate of impingement varied from three fish per hour in February and March to 11 fish per hours in May.

Fish impinged on the traveling screens at CNS are returned to the Missouri River via a return pipe from the traveling screen wash system. During 1983, 66.7 percent of the impinged fish were classified as alive and active (Table 4) and can be assumed to have survived the impingement process.

Amendment 81 to Facility Operating License DRP-46 for Cooper Nuclear Station issued March 11, 1983 eliminated from the Technical Specifications the requirement to submit the Annual Environmental Operating Report Volume I - Nonradiological to the NRC. Therefore, this report covers only the first half of 1983 and is the final submittal of the "Annual Environmental Operating Report, Volume I - Nonradiological" for Cooper Nuclear Station.

Table 1. Monthly summary of fish impinged (total number) at Cooper Nuclear Station, January-June, 1983.

Taxon	Month						Total No.	Percent of Total
	Jan.	Feb.	Mar.	Apr.	May	June		
Smallmouth buffalo	-	-	3	-	-	-	3	8.3
Gizzard shad	3	2	-	-	11	3	19	52.8
Carp	-	-	-	1	-	1	2	5.6
Largemouth bass	-	-	-	-	-	1	1	2.8
White perch	1	-	-	-	-	-	1	2.8
Goldeye	1	-	-	1	-	-	2	5.6
Bigmouth buffalo	1	-	-	-	-	2	3	8.3
Blue sucker	-	1	-	-	-	-	1	2.8
Channel catfish	1	-	-	-	-	1	2	5.6
Flathead catfish	-	-	-	2	-	-	2	5.6
TOTAL	7	3	3	4	11	8	36	
No. of Hourly Collections	2	2	2	2	2	3	13	
Mean No./Hr.	3.5	1.5	1.5	2.0	5.5	2.7	2.8	

Table 2. Summary of the relative abundance (%) of fish impinged at Cooper Nuclear Station, 1974-1983.

Taxon	Year									
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983*
Shovelnose sturgeon	<0.1	-	0.1	0.2	-	0.4	-	-	-	-
Paddlefish	<0.1	0.5	0.1	0.7	-	-	-	-	0.2	-
Longnose gar	<0.1	-	-	0.1	-	-	0.4	-	-	-
Shortnose gar	0.6	0.4	0.1	0.4	-	-	0.8	0.6	0.3	-
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	76.2	52.8
Goldeye	0.6	1.3	2.8	3.8	1.1	0.7	3.5	3.3	0.6	5.6
Carp	2.1	4.4	2.5	4.6	6.4	10.7	3.5	4.8	4.5	5.6
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	2.1	-
White sucker	-	-	0.2	-	-	-	-	-	-	-
Blue sucker	-	-	0.4	-	-	-	0.4	-	-	2.8
Bigmouth buffalo	-	1.6	0.4	0.8	0.4	1.1	0.4	0.6	-	8.3
Smallmouth buffalo	1.4	0.5	0.3	0.8	-	0.4	-	0.3	1.9	8.3
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	-	0.8	5.8
Flathead catfish	0.4	1.9	0.8	1.2	0.4	1.9	1.2	-	0.8	5.8
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	1.3	-
Green sunfish	-	0.1	-	-	-	-	-	-	-	-
Bluegill	0.4	0.5	0.8	0.5	0.4	-	0.4	0.3	0.2	-
Smallmouth bass	-	-	-	0.1	-	-	-	-	-	-
Largemouth bass	0.1	0.1	0.5	0.2	0.8	-	-	-	-	2.8
Crappie ( <i>Pomoxis</i> spp.)	0.4	0.9	2.2	0.3	1.1	-	2.7	0.3	0.2	-
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	10.6	-
Unidentified	-	-	-	0.1	-	-	-	-	0.2	-
White perch	-	-	-	-	-	-	-	-	0.2	2.8

\*Includes January through June, 1983 period only.

Table 3. Number of fish impinged per hour during diurnal and nocturnal sampling periods at Cooper Nuclear Station, January-June, 1983.

Month	Diurnal (0700-1900 hr.)			Nocturnal (1900-0700 hr.)		
	No. of Sample Periods (hr.)	No. of Fish	No./Hr.	No. of Sample Periods (hr.)	No. of Fish	No./Hr.
January	1	5	5.0	1	2	2.0
February	1	0	0.0	1	3	3.0
March	1	0	0.0	1	3	3.0
April	1	4	4.0	1	0	0.0
May	0	-	-	2	11	5.5
June	2	8	4.0	1	0	0.0
TOTAL	6	17		7	19	
Mean No./Hr.			2.8			2.7

Table 4. Summary of the physical condition of fish impinged at the intake structure at Cooper Nuclear Station, January-June, 1983.

Species	Alive and Active		Alive and Inactive		Dead With No Physical Damage		Dead With Physical Damage	
	No.	%	No.	%	No.	%	No.	%
Smallmouth buffalo	-	-	3	100	-	-	-	-
Gizzard shad	13	68.4	4	21.1	2	10.5	-	-
Carp	1	50.0	-	-	-	-	1	50.0
Largemouth bass	1	100.0	-	-	-	-	-	-
White perch	1	100.0	-	-	-	-	-	-
Goldeye	2	100.0	-	-	-	-	-	-
Bigmouth buffalo	2	66.7	1	33.3	-	-	-	-
Blue sucker	-	-	-	-	1	100.0	-	-
Channel catfish	2	100.0	-	-	-	-	-	-
Flathead catfish	2	100.0	-	-	-	-	-	-
TOTAL	24	66.7	8	22.2	3	8.3	1	2.8