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TO:

Mr. Edson G. Case

FROM:

Indiana & Michigan Power Co.
New York, N. Y. 10004
John Tillinghast

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DESCRIPTION

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Following:

1p

ENCLOSURE

Consists of Chlorine Monitoring Data
for Unit # 1.

14p

PLANT NAME: DONALD C. COOK UNIT # 1

jcm 09/28/77

1 CY ENCL Rec'd *

SAFETY

FOR ACTION/INFORMATION

BRANCH CHIEF: (7)

Davis

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INDIANA & MICHIGAN POWER COMPANY

P. O. BOX 18
BOWLING GREEN STATION
NEW YORK, N. Y. 10004

September 22, 1977

Donald C. Cook Nuclear Plant Unit No. 1
Docket No. 50-315
DPR No. 58



Mr. Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. Don K. Davis, Acting Chief
Operating Reactors Branch #2

Dear Mr. Case:

Mr. Don K. Davis, Acting Chief, Operating Reactors Branch #2, requested chlorine monitoring data for Unit No. 1 of the Donald C. Cook Nuclear Plant, in a format outlined in the enclosure to his letter dated July 15, 1977. Enclosed are four copies of our response to this request.

Very truly yours,

John Tillinghast
John Tillinghast
Vice President

JT:mam
Enclosures

Sworn and subscribed to before me
on this 22ND day of September, 1977
in New York County, New York

Gregory M. Gurican
Notary Public

GREGORY M. GURICAN
Notary Public, State of New York
No. 31-4643431
Qualified in New York County
Commission Expires March 30, 1979.

772710121

cc: see next page

4700

5

CHICAGO
JAN 10 1964

cc: G. Charnoff
R. C. Callen
R. J. Vollen
P. W. Steketee
R. Walsh
R. W. Jurgensen
D. V. Shaller - Bridgman

CHLORINE MONITORING DATA

D. C. COOK NUCLEAR PLANT UNIT NO. 1

DOCKET NO. 50-315

1. Chlorination is normally on a twice per day automatic program. Each period of chlorination consists of five minutes of system operation (chlorine injection water supply pump running) to establish a vacuum, twenty minutes of chlorine injection, and the last five minutes for system flushing, for a total chlorination program of thirty minutes. These programs are scheduled to begin twelve hours apart. Each period of chlorination is sampled at the condenser outlet water box at five minute intervals until a zero total chlorine residual is seen or the program ended. The only system treated thus far has been the unit 1 main condenser.
2. Total chlorine residual analysis is done by the amperimetric titration method.
3. The instrument which is used and the concentration of reagents gives a sensitivity of 0.03 ppm total chlorine residual.
4.
 - A. Continuous unit chlorination was begun in February 1975.
 - B. No additional methods are used to maintain condenser cleanliness.
 - C. A few minor equipment problems have occurred such as leaks, heater failures, and electrical equipment failures, however, in spite of the redundancy in the system few complete system outages have been encountered.
5. In the attached list of chlorination the times given are start time of the chlorination program. Samples were taken as described in number 1 above. The total chlorine residuals reported are at the condenser outlet water box. It has been shown in tests that the actual concentration at the discharge in the lake at a point which is inhabitable by fish is on the order of 50% of the value at the condenser outlet water boxes.

MONTH JANUARY

TOTAL CHLORINE RESIDUAL IN PPM

<u>DATE</u>	<u>START TIME</u>	<u>AVERAGE</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
1				
2				
3				
4				
5	1000	0.05	0.07	0.03
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				

MONTH FEBRUARY

TOTAL CHLORINE RESIDUAL IN PPM

DATE START TIME AVERAGE MAXIMUM MINIMUM

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31

1000

0.06

0.06

0.06

MONTH MARCHTOTAL CHLORINE RESIDUAL IN PPM

<u>DATE</u>	<u>START TIME</u>	<u>AVERAGE</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
1	1000	.05	.07	.02
2				
3				
4	1000 & 2200	.06	.06	.05
5	"	.08	.09	.07
6	"	.04	.05	.03
7	"	.07	.07	.06
8	"	.06	.07	.05
9	"	.06	.07	.05
10	1000	.05	.05	.05
11	1000 & 2200	.05	.08	.02
12	"	.06	.07	.05
13	"	.03	.03	.03
14	"	.05	.06	.04
15	"	.02	.02	.01
16	"	.02	.02	.02
17	"	.06	.07	.05
18	"	.07	.08	.05
19	"	.07	.08	.05
20	"	.07	.07	.05
21	"	.07	.08	.05
22	"	.06	.07	.04
23	"	.06	.09	.04
24	"	.07	.10	.03
25	"	.07	.07	.04
26	"	.05	.08	.02
27	"	.05	.06	.03
28	"	.05	.06	.03
29	"	.05	.08	.03
30	"	.05	.07	.03
31	"	.09	.10	.05

MONTH	APRIL		TOTAL CHLORINE RESIDUAL IN PPM		
DATE	START TIME	AVERAGE	MAXIMUM	MINIMUM	
1	1000 & 2200	.06	.08	.04	
2	"	.05	.07	.03	
3	"	.05	.06	.03	
4	"	.04	.05	.02	
5	"	.05	.07	.03	
6	"	.03	.04	.02	
7	"	.05	.06	.03	
8	"	0	0	0	
9	"	0	0	0	
10	"	.05	.06	.03	
11	"	.05	.07	.03	
12	1000	.06	.08	.04	
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					

MONTH MAYTOTAL CHLORINE RESIDUAL IN PPM

<u>DATE</u>	<u>START TIME</u>	<u>AVERAGE</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19	0700 & 1900	.05	.09	.02
20	"	.04	.07	.03
21	"	.05	.06	.03
22	"	.04	.08	.02
23	"	.04	.07	.02
24	"	.04	.05	.02
25	"	.04	.05	.02
26	"	.07	.09	.02
27	"	.07	.08	.05
28	"	.09	.09	.08
29	"	.04	.05	.04
30	"	.06	.08	.04
31	"	.05	.07	.02

MONTH JUNETOTAL CHLORINE RESIDUAL IN PPM

<u>DATE</u>	<u>START TIME</u>	<u>AVERAGE</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
1	0700 & 1900	.07	.08	.07
2	"	.07	.07	.06
3	"	.04	.07	.02
4	"	.05	.05	.04
5	"	.07	.08	.06
6	"	.08	.09	.07
7	"	.05	.07	.02
8	"	.06	.07	.02
9	"	.06	.07	.06
10	"	.04	.04	.04
11	"	.07	.07	.06
12	"	.07	.08	.03
13	"	.06	.08	.03
14	"	.07	.07	.06
15	"	.08	.08	.08
16	"	.06	.08	.05
17	"	.08	.08	.07
18	"	.08	.08	.07
19	"	.07	.07	.06
20	"	.06	.07	.01
21	"	.06	.08	.04
22	"	.07	.07	.06
23	"	.06	.07	.06
24	"	.07	.08	.05
25	"	.07	.08	.06
26	"	.07	.08	.06
27	"	.07	.08	.06
28	"	.08	.08	.07
29	"	.07	.08	.06
30	"	.06	.07	.03
31				

MONTH	JULY	TOTAL CHLORINE RESIDUAL IN PPM		
DATE	START TIME	AVERAGE	MAXIMUM	MINIMUM
1				
2				
3				
4				
5				
6				
7				
8	0700 & 1900	.08	.08	.07
9	1900	.12	.18	.08
10				
11				
12				
13				
14	1900	.03	.04	.03
15	0700 & 1900	.02	.03	.02
16	"	.04	.04	.03
17	"	.05	.05	.04
18	"	.05	.06	.04
19	"	.05	.06	.04
20	"	.05	.06	.04
21	"	.05	.05	.04
22	"	.06	.07	.05
23	"	.05	.06	.05
24	"	.06	.08	.05
25	"	.06	.06	.05
26	"	.04	.04	.04
27	"	.04	.04	.04
28	"	.04	.05	.04
29	"	.04	.05	.04
30	"	.04	.04	.03
31	"	.04	.06	.03

MONTH AUGUSTTOTAL CHLORINE RESIDUAL IN PPM

<u>DATE</u>	<u>START TIME</u>	<u>AVERAGE</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
1	0700 & 1900	.05	.06	.04
2	"	.05	.05	.04
3	"	.05	.05	.04
4	"	.05	.05	.04
5	"	.05	.05	.04
6	"	.05	.06	.04
7	"	.05	.05	.05
8	"	.05	.05	.05
9	"	.05	.05	.05
10	"	.05	.05	.05
11	"	.04	.05	.04
12	"	.04	.06	.04
13	"	.04	.05	.04
14	"	.04	.04	.03
15	"	.04	.05	.03
16	"	.04	.04	.04
17	"	.04	.04	.04
18	"	.04	.05	.03
19	"	.04	.04	.03
20	"	.03	.04	.03
21	"	.05	.07	.04
22	"	.05	.06	.04
23	"	.05	.07	.04
24	"	.05	.06	.04
25	"	.05	.06	.04
26	"	.04	.05	.03
27	"	.04	.05	.03
28	"	.04	.04	.03
29	"	.04	.04	.03
30	"	.04	.04	.03
31	"	.04	.04	.03

MONTH SEPTEMBERTOTAL CHLORINE RESIDUAL IN PPM

<u>DATE</u>	<u>START TIME</u>	<u>AVERAGE</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
1	0700 & 1900	.04	.04	.03
2	"	.04	.05	.02
3	"	.04	.05	.03
4	"	.04	.05	.03
5	"	.04	.05	.03
6	"	.04	.05	.03
7	"	.04	.05	.03
8	"	.05	.05	.03
9	"	.04	.04	.03
10	-0700	.04	.04	.03
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22	1900	0	0	0
23	0700	0	0	0
24				
25	1900	0	0	0
26	0700 & 1900	0	0	0
27	"	.04	.05	.04
28	"	.04	.05	.03
29	0700 & 2200	.04	.05	.03
30	1000 & 2200	.04	.06	.04
31				

MONTH OCTOBERTOTAL CHLORINE RESIDUAL IN PPM

<u>DATE</u>	<u>START TIME</u>	<u>AVERAGE</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
1	2200	.04	.05	.04
2	1000 & 2200	.05	.06	.03
3	"	.05	.07	.05
4	"	.05	.06	.04
5	"	.04	.05	.04
6	"	.04	.05	.03
7				
8				
9	2200	.05	.05	.03
10	1000 & 2200	.04	.05	.04
11	"	.05	.06	.04
12	"	.04	.04	.04
13	"	.05	.06	.04
14	"	.05	.05	.04
15	"	.05	.05	.04
16	"	.05	.07	.04
17	"	.05	.07	.05
18	"	.06	.07	.05
19	"	.06	.07	.05
20	"	.05	.06	.05
21	"	.04	.05	.04
22	"	.05	.06	.04
23	"	.05	.06	.06
24	"	.04	.06	.04
25	"	.05	.05	.04
26	"	.05	.05	.04
27	"	.05	.06	.04
28	"	.04	.04	.03
29	"	.05	.06	.03
30	"	.05	.05	.04
31	0900 & 2100	.05	.05	.04

MONTH	NOVEMBER	TOTAL CHLORINE RESIDUAL IN PPM		
DATE	START TIME	AVERAGE	MAXIMUM	MINIMUM
1	0900 & 1400	.05	.06	.04
2	2200	.04	.04	.03
3	1000 & 2200	.03	.04	.03
4	"	.03	.04	.02
5	"	.04	.05	.03
6	"	.03	.04	.03
7	"	.03	.03	.03
8	"	.03	.04	.03
9	"	.04	.06	.02
10	"	.04	.05	.03
11	"	.03	.03	.03
12				
13				
14				
15				
16				
17				
18	0830 & 1000 & 2200	.03	.03	.03
19	1000 & 2200	.15	.15	.15
20				
21				
22				
23	1000 & 2200	.04	.06	.01
24	"	.05	.08	.02
25	"	.06	.06	.05
26	"	.05	.07	.03
27	"	.06	.06	.06
28	"	.06	.07	.06
29	"	.06	.07	.05
30	"	.06	.06	.05
31				

MONTH DECEMBER 1976TOTAL CHLORINE RESIDUAL IN PPM

<u>DATE</u>	<u>START TIME</u>	<u>AVERAGE</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
1	1000 & 2200	.06	.06	.05
2	"	.06	.06	.05
3	1000	.05	.06	.03
4	1000 & 2200	.05	.06	.05
5	"	.05	.07	.04
6	"	.05	.06	.03
7	"	.05	.07	.05
8	"	.06	.08	.05
9	"	.05	.06	.04
10	1000	.04	.05	.04
11				
12				
13				
14				
15				
16				
17	1000 & 2200	.04	.09	.03
18	"	.02	.03	.01
19	"	.02	.03	.01
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