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INTER-REACTOR RIVER TEMPERATURE DATA

J. P. Corley

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INTER-REACTOR RIVER TEMPERATURE DATA

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September 9, 1966

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INTER-REACTOR RIVER TEMPERATURE DATA

Douglas-United Nuclear is administering a program of studies to evaluate the effects of the proposed Ben Franklin Dam on the Hanford production reactors. Part of this program includes hydraulic model studies of the river from above 100-B Area to below 100-D Area. The Environmental Studies Section of Battelle-Northwest has been requested to furnish accumulated river data and to obtain supplemental data required for verification of the model. The unclassified velocity data has already been submitted. This document has been prepared to transmit the temperature data. The data shown for 1964 and 1965 were obtained in work done under the Division of Production research and development program, "Columbia River Studies" (Mission 14).

Table I

This table shows direct temperature measurements made just downstream from the ends of the reactor outfall lines. The procedure generally was to probe the river at the selected distance to find the maximum temperature in the cross-section. Temperatures were measured with a resistance thermometer.

In most cases, readings were taken at several depths at the indicated point to determine the degree of mixing, and the depth of the maximum reading. Although not shown, the depth readings show little difference vertically at 400 yard distances, even at the lower river flow rates. At 100 yard distances and low river flow rates, vertical mixing is not complete and the maximum reading frequently occurs at some depth beneath the water surface.

In the table, Q_R is river flow rate as measured at the Priest Rapids gauge station, adjusted for time of wave travel to the outfall whenever the flow rate was changing rapidly. T_R is the river temperature measured just upstream from the end of the outfall line. T_e is the corresponding reactor effluent temperature, based on data from Daily Operating Reports, but adjusted for average temperature losses in the 107 Retention Basins as determined in a series of comparative measurements made across the basins from 1963 to 1965. These loss values ranged from 3 to 8°C. T_{max} at 100 and 400 yards were determined as described above. ΔT equals T_{max} minus T_R .

B and C outfall lines, like the D and DR lines, are less than 400 yards apart. The 400 yard distances, therefore, were measured from the downstream line, C and DR respectively.

Except where noted by an approximation symbol, the accuracy of the data is believed to be:

T_R and T_{max} at 400 yards - $\pm 0.2^\circ\text{C}$
 T_e - $\pm 2^\circ\text{C}$
 Q_R - $\pm 5\%$

Table II

Sets of traverse markers have been set up at 400 yards, 1/2 mile, and 1 mile below each of the reactor outfalls, and above N and D Area river pump intakes. Data for all these locations is given in the several sections of Table II. Time has not permitted measurements at all points on any one date.

River traverses for temperature measurements only were made with the resistance thermometer probe suspended from the boat at a water depth of about two feet. When temperature measurements were taken in conjunction with dye tests, a continuous sample line was used, with the intake about two feet beneath the water and with the resistance thermometer installed through a fitting into the sample line. A stadimeter was used for lateral distance measurement, and a fathometer for water depth. The instruments, procedure, and some early data have been discussed in more detail in HW-80888(1).

In the tables, those reactors operating upstream from the traverse location are indicated. Where an asterisk appears, the reactor was shut down and effluent flow rate had been reduced, but the temperature of the effluent was still well above river temperature.

River flow rate was determined, as in Table I, from the Priest Rapids gauge record, as was the base river temperature, T_{PR} . A_t , the cross-sectional area, was calculated from the tabulated distance and depth measurements, and the mean river temperature T_m for the cross-section was calculated by the mean-section method as:

$$T_m = \frac{\sum (w \times d_{ave} \times T_{ave})}{\sum (w \times d_{ave})}$$

In some of the tables, a column is shown headed, for example, "B Effluent Units". This is the measured relative concentration of effluent from the named reactor at that cross-section. In all such tables, Rhodamine B dye was being pumped continuously into the reactor outfall. The units shown are actually dial readings on the Turner Fluorometer used to measure dye concentrations in river water. Since the addition rate and apparent dye loss varied between tests, it is not possible to compare directly the indicated units values for different days. However, for the same date at different locations, the indicated units should be comparable.

Accuracy of the temperature data is the same as for Table I data, except where the notation "est." appears. Depth accuracy is generally ± 2 feet, although frequent difficulties with fathometer equipment may be

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- (1) Corley, J. P., "Effects of Hanford Operations on Columbia River Temperatures - Interim Report No. 2", HW-80888, December 3, 1964.

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reflected in several traverses for which the depths and calculated areas do not reconcile with other data from the same location. The most frequent errors in the data occur in the lateral distance measurement. It is difficult to maintain a straight line with the boat at uniform traverse speed in the high and fluctuating water velocities usually found in this section of the river.

No attempt has been made here to reconcile all the traverses at a given location, the only changes in the raw data having been calibration corrections. It is believed that showing the actual run-to-run variations will permit the user of this data to do so more intelligently.

TABLE I
EFFLUENT PLUME-TEMPERATURES

<u>Outfall</u>	<u>Q_R - cfs</u>	<u>T_R-°C</u>	<u>T_e-°C</u>	<u>100 yd</u>		<u>400 yd</u>		<u>Reactors</u>
				<u>T_{max}-°C</u>	<u>ΔT-°C</u>	<u>T_{max}-°C</u>	<u>ΔT-°C</u>	
1904-B-C	41,000	7.15	86	11.1	3.95	7.65	3.6	B,C
	54,000	6.45	87	10.6	4.15	9.45	3.0	B,C
	87,000	10.5	86	14.4	2.6	11.8	1.3	C
	115,000	4.6	~70	8.3	3.7	6.4	1.8	B,C
	160,000	9.35	87	10.95	1.6	-	-	C
	189,000	16.7	87	17.85	1.15	17.95	1.25	B,C
	255,000	10.45	87	11.65	1.15	11.4	0.95	B,C
1904-K	~45,000	3.80	80	10.15	6.35	9.35	5.55	KE,KW
	71,000	7.45	~70	10.15	2.7	9.5	2.05	KE,KW
	~80,000	5.45	81	9.45	4.0	7.85	2.40	KE,KW
	153,000	9.1	87	9.9	0.8	-	-	KE
	241,000	10.95	88	12.95	2.0	12.3	1.35	KE,KW
	277,000	12.8	~70	-	-	14.15	1.35	KE,KW
1904-D-DR	77,000	9.1	89	13.7	4.6	12.5	3.4	DR
	108,000	6.15	76	8.3	2.15	7.25	1.1	D
	140,000	18.05	89	20.35	2.3	19.90	1.85	D,DR
	237,000	11.3	88	12.6	1.3	12.2	0.9	D,DR
	277,000	13.2	89	-	-	14.05	0.85	D
1908-N	140,000	3.55	36	6.8	3.25	6.05	2.5	-

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TABLE II-1

RIVER TEMPERATURE TRAVERSES - 400 YARDS BELOW C
River Mile: 383.8

Date: 3-18-65
Time: 1025
Reactors Operating: B,C
River Flow Rate: 95,000 cfs

Date: 3-18-65
Time: 1035
Reactors Operating: B,C
River Flow Rate: 95,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	B Effluent Units
25	7.5	4.6	0
50	22	4.55	0
75	22.5	4.5	0
100	23.5	4.85	0
125	25.5	5.65	32
150	25.5	5.6	70
175	24	5.45	46
200	22.5	5.75	19
225	23.5	4.85	2
250	17	4.55	0
275	13	4.55	0
300	8.5	4.5	0
325	5.5	4.5	0
350	4.5	4.5	0
375	3.5	4.5	0
400	3.5	4.5	0
425	4.5	4.5	0
450	5.5	4.5	0
475	6.5	4.5	0
480	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	B Effluent Units
25	8.5	4.8	0
50	14	4.6	0
75	16	-	0
100	18	4.55	0
125	21	-	0
150	23.5	4.55	0
175	23.5	5.7	16
200	22.5	5.45	68
225	26.5	4.75	14
250	24.5	4.6	0
275	17	4.6	0
300	12	4.6	0
325	8.5	4.6	0
350	7.5	4.6	0
375	5.5	4.6	0
400	9.5	4.55	0
425	9.5	4.55	0
450	5.5	4.5	0
475	3	4.7	0
480	0	-	0

$$A_t = 19,600 \text{ ft}^2$$

$$T_m = 4.95^\circ\text{C}$$

$$T_{PR} = 4.1^\circ\text{C}$$

$$T_B = 86^\circ\text{C}$$

$$T_C = 87^\circ\text{C}$$

$$A_t = 20,200 \text{ ft}^2$$

$$T_m = 4.8^\circ\text{C}$$

TABLE II-1
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - 400 YARDS BELOW C
River Mile: 383.8

Date: 5-26-66
Time: 1105
Reactors Operating: B,C*
River Flow Rate: 175,000 cfs

Date: 11-8-64
Time: 0920
Reactors Operating: B,C
River Flow Rate: 40,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C
0	2	12.5
25	7	12.2
45	20	11.85
70	27	12.8
95	30	13.0
120	30	11.85
145	28	11.75
170	28	11.75
195	24	11.75
220	19	11.75
245	15	11.75
270	14	11.75
295	10	11.75
320	10	11.75
345	9	11.75
370	9	11.8
395	9	11.8
420	12	11.85
445	7	11.9
470	7	12.1
495	6	12.25
520	4	12.6
545	2	13.4
570	2	13.45
580	0	-

Distance from Plant Shore-yds.	Depth feet	Temp. °C	C Effluent Units
30	9.5	11.6	0
50	10.5	15.0	25
75	13	15.0	52
100	13	18.6	71
125	11.5	17.1	29
150	8	15.6	5
175	7.5	13.9	0
200	13.5	12.0	0
225	13	11.6	0
250	11.5	11.6	0
275	8.5	11.5	0
290	5.5	11.3	0
330	0	-	0

$$A_t = 24,600 \text{ ft}^2$$

$$T_m = 12.05^\circ\text{C}$$

$$T_{PR} = 11.8^\circ\text{C}$$

$$T_B = 88^\circ\text{C}$$

$$T_c = 80^\circ\text{C (est.)}$$

$$A_t = 8,500 \text{ ft}^2$$

$$T(181\text{-KW}) = 12.55^\circ\text{C}$$

$$T_m = 14.0^\circ\text{C}$$

$$T_{PR} = 12.0^\circ\text{C}$$

$$T_B = 84^\circ\text{C}$$

$$T_c = 88^\circ\text{C}$$

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TABLE II-2

RIVER TEMPERATURE TRAVERSES - ONE-HALF MILE BELOW C

River Mile: 383.5

(Plant shore to island only)

Date: 5-26-66
Time: 1250
Reactors Operating: B,C*
River Flow Rate: 185,000 cfs

Date: 5-26-66
Time: 1300
Reactors Operating: B,C*
River Flow Rate: 185,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	2	12.55
25	11	12.35
50	15	12.15
70	21	12.05
95	22	13.0
120	24	13.1
145	20	12.25
170	20	11.95
195	23	11.9
220	25	11.9
245	23	11.9
270	21	11.9
295	17	11.9
320	16	11.95
345	12	11.95
370	9	12.0
395	7	12.0
420	5	12.05
445	4	12.05
470	4	12.1
495	2	12.1
505	2	12.1

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	2	12.5
25	-	12.45
50	-	-
70	18	12.4
95	21	12.2
120	25	12.9
145	22	12.9
170	24	12.3
195	25	11.95
220	25	11.75
245	25	11.75
270	22	11.75
295	20	11.75
320	18	11.75
345	16	11.8
370	15	11.8
395	13	11.8
420	12	11.8
445	9	11.85
470	5	11.95
495	4	11.9
505	2	12.0

$$A_t = 22,300 \text{ ft}^2$$

$$T_m = 12.15^\circ\text{C}$$

$$T_{PR} = 11.8^\circ\text{C}$$

$$T_B = 38^\circ\text{C}$$

$$T_c = 80^\circ\text{C (est.)}$$

$$A_t = 25,500 \text{ ft}^2$$

$$T_m = 12.1^\circ\text{C}$$

TABLE II-3

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW C
River Mile: 383.0

Date: 8-4-64

Time: 1340

Reactors Operating: B,C *

River Flow Rate: 185,000 cfs

Date: 8-6-64

Time: 0830

Reactors Operating: B,C

River Flow Rate: 160,000 cfs

Date: 8-6-64

Time: 0840

Reactors Operating: B,C

River Flow Rate: 160,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	Distance from Plant Shore-yds.	Depth feet	Temp. °C	Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	3.5	17.35	25	11.5	16.85	25	-	16.5
25	7.5	17.25	50	12	-	50	14	16.8
50	14	17.35	75	13	16.95	75	15	16.85
65	17	17.0	100	14	-	100	16	17.0
90	18	16.95	125	15	17.05	125	18	17.25
115	19	17.1	150	15.5	-	150	-	-
140	20	17.15	175	16	17.45	175	-	17.5
165	18	17.15	200	17	17.55	200	19	17.45
190	-	17.05	225	17	17.5	225	19	17.3
215	20	16.95	250	18	17.3	250	17	17.15
240	20	16.9	275	17	17.05	275	16	17.0
265	20	16.9	300	15	16.95	300	17	16.95
290	19	16.9	325	15.5	-	325	17	16.95
315	19	16.9	350	16	16.9	350	15	16.9
365	17	16.9	375	15.5	-	375	14	16.9
415	15	16.9	400	15	16.9	400	12	16.9
465	9.5	16.9	425	11	-	425	9.5	16.9
510	0	-	450	6.5	16.95	450	7.5	16.9
			490	0	-	490	0	-

$A_t = 23,900$ sq. ft.

$T_m = 17.0^{\circ}\text{C}$

$T_{PR} = 16.4^{\circ}\text{C}$

$T_B = 84^{\circ}\text{C}$

$T_c = 70^{\circ}\text{C}$ (est.)

T (181-KW) = 17.3°C

T (181-KE) = 17.25°C

$A_t = 18,900$ sq. ft.

$T_m = 17.1^{\circ}\text{C}$

$T_{PR} = 16.4^{\circ}\text{C}$

$T_{B,C} = 86^{\circ}\text{C}$

$A_t = 18,900$ sq. ft.

$T_m = 17.1^{\circ}\text{C}$

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TABLE II-3
(CONTINUED)RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW C
River Mile: 383.0

Date: 3-18-65
Time: 1050
Reactors Operating: B,C
River Flow Rate: 95,000 cfs

Date: 5-26-66
Time: 1142
Reactors Operating: B,C*
River Flow Rate: 177,000

Distance from Plant Shore-yds.	Depth feet	Temp. °C	B Effluent Units
5	3.5	4.8	0
25	6.5	4.75	0
50	12	4.75	0
65	16	4.75	0
90	17	4.9	0
115	18	5.0	0
140	20	5.3	4
165	15.5	5.6	25
190	13.5	5.45	48
215	22	4.85	23
240	21	4.7	2
265	15.5	4.6	0.5
290	15.5	4.65	0
315	13	4.65	0
340	9.5	4.65	0
365	6.5	4.65	0
390	5.5	4.65	0
415	3	4.65	0
440	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	2	12.2
25	10	12.0
60	15	11.95
85	17	12.1
110	18	12.6
135	16	12.25
160	19	11.95
185	18	11.75
210	18	11.7
235	18	11.7
260	17	11.7
285	16	11.7
310	15	11.75
335	13	11.75
360	10	11.85
385	9	12.05
410	10	12.1
495	10	12.0
510	10	12.1
535	5	12.2
560	2	12.3
-	-	-

$$A_t = 16,700 \text{ ft}^2$$

$$T_m = 4.9^\circ\text{C}$$

$$T_{PR} = 4.1^\circ\text{C}$$

$$T_B = 86^\circ\text{C}$$

$$T_c = 87^\circ\text{C}$$

$$T (131-KW) = 4.7^\circ\text{C}$$

$$T (181-KE) = 6.5^\circ\text{C}$$

$$A_t = 21,600 \text{ ft}^2$$

$$T_m = 11.95^\circ\text{C}$$

$$T_{PR} = 11.8^\circ\text{C}$$

$$T_B = 88^\circ\text{C}$$

$$T_c = 80^\circ\text{C (est.)}$$

TABLE II-4

RIVER TEMPERATURE TRAVERSES - 400 YARDS BELOW K
River Mile: 381.5

Date: 3-4-66
Time: 1315
Reactors Operating: B,KE,KW
River Flow Rate: 115,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
5	3.5	5.1
25	8.5	4.0
40	10.5	4.0
65	10.5	4.0
90	10.5	4.9
115	12	4.7
140	16	4.2
165	20	3.8
190	26.5	3.9
215	31.5	4.7
240	31.5	6.0
265	29	3.6
290	28	3.5
315	26.5	3.5
340	16	3.5
365	9.5	3.5
390	9.5	3.5
415	9.5	3.5
440	4.5	3.5
450	3.5	3.6
470	0	-

$$A_t = 22,900 \text{ ft}^2$$

$$T_m = 4.15^\circ\text{C}$$

$$T_{PR} = 3.4^\circ\text{C}$$

$$T_B = 87^\circ\text{C}$$

$$T_K = 79^\circ\text{C}$$

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TABLE II-4
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - 400 YARDS BELOW K
River Mile: 381.5

Date: 4-3-66

Time: 1015

Reactors Operating: B,C,KE,KW

River Flow Rate: 39,000 cfs

Date: 4-3-66

Time: 1025

Reactors Operating: B,C,KE,KW

River Flow Rate: 39,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KE Effluent Units
10	2	11.3	24
30	5	11.25	51
55	5	13.5	78
80	15	12.0	51
105	8	11.5	24
130	3	11.3	27
155	11	10.5	21
180	21	13.5	53
205	29	12.9	78
230	40	12.7	64
255	35.5	12.6	65
280	30	-	2
305	29	6.7	0
330	23	6.5	0
355	5	6.5	0
380	5	6.5	0
405	7	6.6	0
410	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KE Effluent Units
10	2	-	-
30	4	-	30
55	7	12.0	65
80	8	13.0	67
105	9	10.8	24
130	13	11.5	9
155	18	12.7	22
180	33.5	13.0	62
205	32	14.0	69
230	36.5	-	62
255	32	-	57
280	30	6.5	5
305	28	6.4	0
330	25	6.4	0
355	8	6.4	0
380	6	6.5	0
405	7	6.6	0
410	0	-	0

$$A_t = 20,200 \text{ ft}^2$$

$$T_m = 10.8^\circ\text{C}$$

$$T_{PR} = 6.3^\circ\text{C}$$

$$T_{B,C} = 87^\circ\text{C}$$

$$T_K = 83^\circ\text{C}$$

$$A_t = 21,900 \text{ ft}^2$$

$$T_m = 10.0^\circ\text{C (est.)}$$

TABLE II-4
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - 400 YARDS BELOW 1904-K
River Mile: 381.5

Date: 5-20-66

Time: 1105

Reactors Operating: B,C,KE,KW

River Flow Rate: 195,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	2	12.8
25	11	11.1
50	16	11.1
75	15	11.15
100	15	11.45
125	16	11.55
150	21	11.4
175	26	13.35
200	36.5	13.3
225	39	11.1
250	40	10.95
275	36.5	10.95
300	34.5	11.0
325	31	11.0
350	25	11.05
375	16	11.1
400	17	11.15
425	15	11.2
450	7	11.65
475	4	12.3
490	2	12.7
515	0	-

$$A_t = 31,600 \text{ ft}^2$$

$$T_m = 11.45^\circ\text{C}$$

$$T_{PR} = 10.6^\circ\text{C}$$

$$T_{B,C} = 88^\circ\text{C}$$

$$T_K = 84^\circ\text{C}$$

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TABLE II-5

RIVER TEMPERATURE TRAVERSES - ONE-HALF MILE BELOW K

River Mile: 381.3

Date: 8-4-64

Time: 1405

Reactors Operating: B,C*,KE,KW

River Flow Rate: 185,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
50	7.5	17.1
80	15	17.05
105	17	17.2
130	18	17.2
155	21	17.1
180	23.5	17.15
205	24.5	17.45
230	31.5	18.05
255	37.5	18.05
280	37.5	17.5
305	36.5	17.0
355	35.5	16.8
380	34.5	16.8
405	29	16.8
430	18	-
480	0	-

$$A_t = 30,900 \text{ ft}^2$$

$$T_m = 17.2^\circ\text{C}$$

$$T_{FR} = 16.4^\circ\text{C}$$

$$T_B = 84^\circ\text{C}$$

$$T_c = 70^\circ\text{C (est.)}$$

$$T_K = 87^\circ\text{C}$$

$$T (181\text{-KW}) = 17.3^\circ\text{C}$$

$$T (181\text{-KE}) = 17.25^\circ\text{C}$$

TABLE II-5
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE-HALF MILE BELOW K
River Mile: 381.3

Date: 9-1-64
Time: 1020
Reactors Operating: B,C*,KW
River Flow Rate: 80,000 cfs (est.)

Date: 9-1-64
Time: 0830
Reactors Operating: B,C*,KW
River Flow Rate: 80,000 cfs (est.)

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KW Effluent Units
25	5.5	16.8	1
50	5.5	16.8	2
75	7.5	17.2	8
100	8.5	17.4	11
125	12	17.35	10
150	14	17.0	4
175	17	17.15	4
200	25.5	17.4	6
225	28	17.9	15
250	29	17.8	16
275	28	17.2	10
300	28	17.0	1
325	28	16.8	1
350	-	16.6	1
375	20	16.6	1
400	12	16.6	0
425	19	16.55	0
450	18	-	0
500	5.5	16.5	0
525	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KW Effluent Units
25	5.5	16.8	2
50	7.5	17.05	2
75	8.5	17.2	8
100	8.5	17.6	14
125	11.5	17.3	9
150	14	17.1	2
175	14	17.2	3
200	22.5	17.2	5
225	26.5	17.8	13
250	30.5	17.75	15
275	24.5	17.6	13
300	28	17.1	6
325	27	16.9	-
350	25.5	16.75	-
375	20	16.6	0
400	10.5	16.5	0
425	19	16.5	0
450	18	16.5	0
500	5.5	16.5	0
525	0	-	0

$$A_t = 25,600 \text{ ft}^2$$

$$T_m = 17.05^\circ\text{C}$$

$$T_{PR} = 16.2^\circ\text{C}$$

$$T_B = 86^\circ\text{C}$$

$$T_c = 70^\circ\text{C (est.)}$$

$$T_{KW} = 88^\circ\text{C}$$

$$A_t = 25,000 \text{ ft}^2$$

$$T_m = 17.45^\circ\text{C}$$

$$T_{PR} = 16.1^\circ\text{C}$$

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TABLE II-5
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE-HALF MILE BELOW K

River Mile: 381.3

Date: 11-28-64

Time: 0830

Reactors Operating: B,C,KE,KW

River Flow Rate: 41,000 cfs

<u>Distance</u> <u>from Plant</u> <u>Shore-yds.</u>	<u>Depth</u> <u>feet</u>	<u>Temp.</u> <u>°C</u>	<u>KW</u> <u>Effluent</u> <u>Units</u>
55	3.5	13.2	20
70	5.5	13.2	30
95	9.5	12.6	34
120	7.5	12.75	36
145	10.5	12.6	35
170	17.5	13.0	35
195	24.5	13.0	36
220	25.0	12.55	31
245	25.5	12.4	34
270	25.5	12.7	37
295	25.5	11.9	31
320	20	-	16
345	10.5	-	7
370	-	8.95	0
395	7.0	8.9	0
420	-	8.9	0
445	-	8.9	0
470	3.5	8.95	0
480	0	-	0

$$A_t = 17,700 \text{ ft}^2$$

$$T_m = 11.75^\circ\text{C}$$

$$T_{PR} = 9.4^\circ\text{C}$$

$$T_B = 82^\circ\text{C}$$

$$T_c = 86^\circ\text{C}$$

$$T_K = 83^\circ\text{C}$$

TABLE II-5
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE-HALF MILE BELOW K
River Mile: 381.3

Date: 3-18-65
Time: 1130
Reactors Operating: B,C,KE,KW
River Flow Rate: 95,000 cfs.

Date: 3-18-65
Time: 1140
Reactors Operating: B,C,KE,KW
River Flow Rate: 95,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	B Effluent Units
5	-	-	2
25	3.5	5.2	2
50	8.5	5.3	2
75	8.5	5.2	2
100	10.5	5.5	2
125	9.5	6.1	3
150	12	6.0	3
175	15	5.6	10
200	24.5	5.4	14
225	30.5	6.4	16
250	33.5	7.5	19
275	32.5	7.8	16
300	29	5.6	9
325	27	5.2	3
350	23.5	5.0	3
375	15	4.85	1
400	7.5	4.8	1
425	10.5	4.75	1
450	9.5	4.7	0
475	5.5	4.75	0
480	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	B Effluent Units
5	-	5.55	2
25	5.5	5.2	2
50	4.5	5.25	2
75	7.5	5.4	3
100	-	5.7	3
125	7.5	5.7	7
150	8.5	5.3	10
175	12	5.7	18
200	17	6.7	20
225	27	7.1	18
250	32.5	6.2	14
275	31.5	4.75	9
300	33.5	4.65	3
325	29	4.6	1
350	29	4.6	1
375	22	4.6	0
400	8.5	4.6	0
425	9.5	4.6	0
450	7.5	4.7	0
475	5.5	4.7	0
480	0	-	0

$$A_t = 23,400 \text{ ft}^2$$

$$T_m = 5.85^\circ\text{C}$$

$$T_{PR} = 4.2^\circ\text{C}$$

$$T_B = 86^\circ\text{C}$$

$$T_c = 87^\circ\text{C}$$

$$T_K = 81^\circ\text{C}$$

$$T (181-KW) = 4.7^\circ\text{C} \quad 1 \text{ unit}$$

$$T (181-KE) = 6.65^\circ\text{C} \quad 1 \text{ unit}$$

$$A_t = 22,500 \text{ ft}^2$$

$$T_m = 5.25^\circ\text{C}$$

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TABLE II-5
(CONTINUED)

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RIVER TEMPERATURE TRAVERSES - ONE-HALF MILE BELOW K
River Mile: 381.3

Date: 4-8-65
Time: 1043
Reactors Operating: B,C,KE,KW
River Flow Rate: 65,000 cfs (est.)

Date: 3-4-66
Time: 1325
Reactors Operating: B,KE,KW
River Flow Rate: 115,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C
20	4.8	7.95
40	7.2	7.5
90	10.2	7.55
140	15.3	7.05
190	23.3	7.75
240	29.5	7.55
290	28.8	6.0
340	22.3	6.0
390	10	6.0
440	7.5	6.0
455	5.5	6.4
470	0	-

Distance from Plant Shore-yds.	Depth feet	Temp. °C
25	3.5	4.1
70	9.5	4.0
95	10.5	4.3
120	12	4.4
170	14	3.9
195	16	4.0
220	20	4.1
245	24.5	5.9
270	29	5.5
295	29	4.0
320	29	3.5
345	29	3.5
370	26.5	3.5
395	19	3.5
420	13	3.5
445	12	3.5
470	10.5	3.6
495	2	3.6
510	0	-

$$A_t = 23,200 \text{ ft}^2$$

$$T_m = 6.8^\circ\text{C}$$

$$T_{PR} = 5.4^\circ\text{C}$$

$$T_B = 85^\circ\text{C}$$

$$T_c = 87^\circ\text{C}$$

$$T_K = 81^\circ\text{C}$$

$$A_t = 24,300 \text{ ft}^2$$

$$T_m = 4.1^\circ\text{C}$$

$$T_{PR} = 3.4^\circ\text{C}$$

$$T_B = 87^\circ\text{C}$$

$$T_K = 79^\circ\text{C}$$

TABLE II-5
(CONTINUED)

RIVER TEMPERATURE TRAVERSES -ONE-HALF MILE BELOW K
River Mile: 381.3

Date: 4-3-66
Time: 1055
Reactors Operating: B,C,KE,KW
River Flow Rate: 39,000 cfs

Date: 4-3-66
Time: 1105
Reactors Operating: B,C,KE,KW
River Flow Rate: 39,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KE Effluent Units	Distance from Plant Shore-yds.	Depth feet	Temp. °C	KE Effluent Units
55	4	11.75	22	55	3	-	-
65	8	12.2	56	65	6	-	43
90	8	12.2	44	90	8	12.05	37
115	10	11.5	30	115	10	12.25	20
140	15	10.9	15	140	14	11.45	16
165	15	10.8	37	165	16	10.5	28
190	16	11.0	50	190	28	11.0	45
215	23	11.1	42	215	31	10.9	40
240	30	10.3	32	240	33.5	10.8	35
265	33.5	9.5	27	265	31	10.1	29
290	36.5	8.5	17	290	31	9.8	28
315	28	7.1	3	315	26	8.45	12
340	16	6.8	0	340	21	6.95	0
365	10	6.7	0	365	19	6.95	0
390	11	6.8	0	390	15	7.55	0
415	9	6.8	0	415	8	7.25	0
440	5	-	0	440	10	7.15	0
455	4	8.0	0	455	4	8.45	0
470	0	-	0	470	0	-	0

$$A_t = 20,400 \text{ ft}^2$$

$$T_m = 9.35^\circ\text{C}$$

$$T_{PR} = 6.3^\circ\text{C}$$

$$T_{B,C} = 87^\circ\text{C}$$

$$T_K = 83^\circ\text{C}$$

$$A_t = 20,500 \text{ ft}^2$$

$$T_m = 9.6^\circ\text{C}$$

$$T_{PR} = 6.2^\circ\text{C}$$

$$T_{B,C} = 87^\circ\text{C}$$

$$T_K = 83^\circ\text{C}$$

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TABLE II-5
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE-HALF MILE BELOW K

River Mile: 381.3

Date: 5-20-66

Time: 1120

Reactors Operating: B,C,KE,KW

River Flow Rate: 195,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
5	2	11.9
25	6	11.4
70	14	11.3
95	16	11.8
120	16	11.8
145	19	11.45
170	22	11.45
195	23	12.45
220	30	12.6
245	36.5	12.45
270	36.5	11.3
295	36.5	11.0
320	36.5	10.9
345	35.5	10.85
370	29	10.9
395	18	10.95
420	17	10.95
445	15	11.0
470	11	11.7
495	3	12.45
520	0	-

$$A_t = 32,000 \text{ ft}^2$$

$$T_m = 11.45^\circ\text{C}$$

$$T_{PR} = 10.6^\circ\text{C}$$

$$T_{B,C} = 88^\circ\text{C}$$

$$T_K = 84^\circ\text{C}$$

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TABLE II-6

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW K
River Mile: 380.8

Date: 8-4-64

Time: 1415

Reactors Operating: B,C*,KE,KW

River Flow Rate: 185,000 cfs

Date: 8-6-64

Time: 0855

Reactors Operating: B,C,KE,KW

River Flow Rate: 160,000 cfs

Date: 8-6-64

Time: 0905

Reactors Operating: B,C,KE,KW

River Flow Rate: 160,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C
50	5.5	16.95
75	6.5	16.95
100	7.5	16.95
125	14	17.15
150	20	17.2
175	28	17.4
200	34.5	17.7
225	36.5	17.85
250	39	17.5
275	40	17.05
300	40	16.8
325	39	16.7
350	39	16.65
375	38.5	16.65
400	34.5	16.7
425	28	16.75
450	19	16.95
475	10.5	-
500	5.5	-
540	0	-

Distance from Plant Shore-yds.	Depth feet	Temp. °C
70	3.5	17.1
95	6.5	17.0
120	13	17.1
145	17	17.2
170	19	17.3
195	29	17.5
220	40	18.05
245	40	18.2
270	-	-
295	37.5	17.65
320	37.5	17.3
345	38.5	17.0
370	36.5	16.9
395	36.5	16.85
420	31.5	16.8
445	27	16.8
470	12	16.75
530	0	-

Distance from Plant Shore-yds.	Depth feet	Temp. °C
70	3.5	17.05
95	-	-
120	8.5	17.25
145	-	-
170	16	17.4
195	21	17.55
220	39	17.65
245	40	18.1
270	40	18.2
295	37.5	17.85
320	36.5	17.25
345	36.5	17.0
370	36.5	16.85
395	38.5	16.8
420	34.5	16.8
445	16	16.75
470	10.5	16.75
530	0	-

$$A_t = 34,300 \text{ ft}^2$$

$$T_m = 17.15^\circ\text{C}$$

$$T_{PR} = 16.4^\circ\text{C}$$

$$T_B = 84^\circ\text{C}$$

$$T_c = 70^\circ\text{C (est.)}$$

$$T_K = 87^\circ\text{C}$$

$$T (181-N) = 17.15^\circ\text{C}$$

$$A_t = 34,200 \text{ ft}^2$$

$$T_m = 17.35^\circ\text{C}$$

$$T_{PR} = 16.4^\circ\text{C}$$

$$T_{B,C} = 85^\circ\text{C}$$

$$T_K = 88^\circ\text{C}$$

$$A_t = 31,900 \text{ ft}^2$$

$$T_m = 17.35^\circ\text{C}$$

TABLE II-6
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW K
River Mile: 380.8

Date: 9-1-64
Time: 1105
Reactors Operating: B,C*,KW
River Flow Rate: 100,000 cfs (est.)

Date: 9-1-64
Time: 1115
Reactors Operating: C*,KW,B
River Flow Rate: 100,000 cfs (est.)

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>	<u>KW Effluent Units</u>
25	4.5	17.3	2
50	11	17.4	5
75	22.5	17.3	6
100	25.5	17.25	3
125	30.5	17.5	7
150	30.5	17.85	11
175	33.5	17.85	9
200	23.5	17.5	1
225	32.5	17.1	0
250	32.5	17.0	0
275	31.5	16.85	0
300	33	16.8	0
325	23.5	16.8	0
350	11	16.8	0
375	4	16.8	0
380	0	-	0

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
25	4.5	17.3
50	5.5	17.3
75	15	17.3
100	24.5	17.4
125	26.5	17.8
150	33.5	17.8
175	33.5	18.0
200	33.5	17.6
225	32.5	17.0
250	30.5	16.0
275	29	16.9
300	23.5	16.8
325	19	16.8
350	8.5	16.8
375	-	16.9
380	0	-

$$A_t = 26,200 \text{ ft}^2$$

$$T_m = 17.25^\circ\text{C}$$

$$T_{FR} = 16.3^\circ\text{C}$$

$$T_B = 86^\circ\text{C}$$

$$T_c = 70^\circ\text{C (est.)}$$

$$T_{KW} = 88^\circ\text{C}$$

$$A_t = 23,800 \text{ ft}^2$$

$$T_m = 17.3^\circ\text{C}$$

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TABLE II-6
(CONTINUED)

RIVER TEMPERATURE TRAVERSES -ONE MILE BELOW K
River Mile: 380.8

Date: 11-8-64
Time: 1015
Reactors Operating: B,C,KE,KW
River Flow Rate: 40,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	C Effluent Units
25	4.5	16.3	12
60	11	16.0	13
85	22	16.05	20
110	27	16.2	25
135	28	15.7	25
160	27	14.95	24
185	27	14.65	20
210	27.5	13.95	13
235	25	13.1	6
260	14	12.55	3
285	19.5	12.25	1
310	9	11.65	0
335	4.5	11.5	0
340	0	-	0

$$A_t = 19,000 \text{ ft}^2$$

$$T_m = 14.45^\circ\text{C}$$

$$T_{PR} = 12.0^\circ\text{C}$$

$$T (181-KW) = 12.5^\circ\text{C}$$

11 Units

$$T_B = 84^\circ\text{C}$$

$$T_C = 88^\circ\text{C}$$

$$T_K = 84^\circ\text{C}$$

TABLE II-6
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW K
River Mile: 380.8

Date: 11-28-64

Time: 0910

Reactors Operating: B,C,KE,KW

River Flow Rate: 41,000 cfs

Date: 11-28-64

Time: 0925

Reactors Operating: B,C,KE,KW

River Flow Rate: 41,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KW Effluent Units
5	3.5	13.0	10
20	-	-	11
45	22	12.95	32
70	26.5	13.15	37
95	29	13.35	37
120	26.5	13.0	37
145	27	12.0	30
170	29	11.0	23
195	27	10.4	15
220	24.5	10.1	12
245	17	9.5	8
270	14	9.1	5
295	5.5	8.9	3
315	3.5	8.6	0
320	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KW Effluent Units
5	3.5	-	11
20	12	-	29
45	24.5	12.9	38
70	27	13.2	37
95	29	12.8	33
120	29	12.2	28
145	26.5	11.2	19
170	27	10.7	13
195	29	10.2	1
220	22	9.3	0
245	-	-	0
270	8.5	8.8	0
295	-	-	0
315	3.5	8.7	0
320	0	-	0

$$A_t = 18,700 \text{ ft}^2$$

$$T_m = 11.55^\circ\text{C}$$

$$T_{PR} = 9.4^\circ\text{C}$$

$$T_B = 82^\circ\text{C}$$

$$T_c = 86^\circ\text{C}$$

$$T_K = 83^\circ\text{C}$$

$$T (181-N) = 12.1^\circ\text{C}$$

20 Units

$$A_t = 19,900 \text{ ft}^2$$

$$T_m = 11.35^\circ\text{C}$$

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TABLE II-6
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW K
River Mile: 380.8

Date: 4-4-65
Time: 1030
Reactors Operating: B,C,KE
River Flow Rate: 42,000 cfs

Date: 3-4-66
Time: 1440
Reactors Operating: B,KE,KW
River Flow Rate: 115,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C
25		9.3
35		9.1
60		8.1
85		7.2
110	No	7.2
135	valid	7.35
160	data	7.25
185		6.5
210		5.9
235		5.5
260		5.35
285		5.3
310		5.3
335		5.3
360		6.1
375		-

Distance from Plant Shore-yds.	Depth feet	Temp. °C
65	3.5	4.4
90	6.5	4.2
115	14	4.3
140	15	4.4
165	29	4.1
190	32.5	4.0
215	31.5	5.1
240	32.5	5.2
265	31.5	4.1
290	30.5	3.6
315	29	3.6
340	28	3.5
365	19	3.6
390	14	3.6
415	5.5	3.6
425	3.5	3.7
455	0	-

A_t = Unknown

T_m = 6.4°C (est.)

T_{PR} = 5.2°C

T_B = 86°C

T_C = 88°C

T_{KE} = 80°C

T (181-N) = 6.8°C

A_t = 24,000 ft²

T_m = 4.1°C

T_{PR} = 3.4°C

T_B = 87°C

T_K = 79°C

T (181-N) = 4.0°C

TABLE II-6
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW K
River Mile: 380.8

Date: 5-20-66
Time: 1145
Reactors Operating: B,C,KE,KW
River Flow Rate: 195,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
5	2	11.6
25	5	11.7
50	6	11.45
75	6	11.45
100	8	11.7
125	16	11.5
150	25	11.45
175	35.5	11.8
200	39	12.3
225	40	12.3
250	40	11.5
275	39	11.0
300	38	10.95
325	31	11.0
350	29	11.1
375	24	11.2
400	17	11.35
425	9	11.9
450	3	13.5
475	0	-

$$A_t = 30,700 \text{ ft}^2$$

$$T_m = 11.5^\circ\text{C}$$

$$T_{PR} = 10.6^\circ\text{C}$$

$$T_{B,C} = 88^\circ\text{C}$$

$$T_K = 84^\circ\text{C}$$

$$T (181-N) = 11.1^\circ\text{C}$$

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TABLE II-7

RIVER TEMPERATURE TRAVERSES - ABOVE 100-N
River Mile: 380.0

Date: 2-1-65

Time: 1230

Reactors Operating: C,KE,KW

River Flow Rate: 65,000 cfs

Date: 2-10-65

Time: 1350

Reactors Operating: B,C,KE,KW

River Flow Rate: 135,000

Date: 3-5-65

Time: 0810

Reactors Operating: B,C,KE,KW

River Flow Rate: 90,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>	<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>	<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
5	3.5	8.7	5	5.5	4.85	5	4.5	4.0
25	8.5	8.1	25	14.5	4.35	25	16	4.1
50	12	7.65	50	20	4.05	50	15	4.1
95	15.5	6.45	90	22.5	4.05	75	16.5	4.2
145	14.5	6.2	140	21	4.05	90	17.5	4.2
195	11.5	6.45	190	18	4.25	115	18	4.2
245	14	6.8	240	20.5	4.4	140	18.5	4.2
295	19.5	6.9	290	25.5	4.6	165	16	4.2
345	32.5	5.75	340	39	4.3	190	16	4.2
395	33.5	4.8	390	40	3.75	215	14.5	4.25
445	18.5	4.4	440	28	3.45	240	15	4.3
495	8.5	4.35	490	19	3.45	265	18.5	4.35
545	5.5	4.35	540	12.5	3.5	290	21	4.35
565	0	-	590	8.5	3.55	315	23	4.4
			600	0	-	340	27.5	4.35
						365	30.5	4.2
						390	35.5	4.0
						415	35.0	3.9
						440	30	3.65
						465	23	3.65
						490	15.5	3.6
						515	12	3.6
						540	10	3.6
						565	7.5	3.55
						590	3.5	3.55
						595	0	-

$$A_t = 27,700 \text{ ft}^2$$

$$T_m = 5.85^\circ\text{C}$$

$$T_{PR} = 4.2^\circ\text{C}$$

$$T_c = 87^\circ\text{C}$$

$$T_K = 81^\circ\text{C}$$

$$T (181-N) = 7.1^\circ\text{C}$$

$$A_t = 39,900 \text{ ft}^2$$

$$T_m = 4.0^\circ\text{C}$$

$$T_{PR} = 3.0^\circ\text{C}$$

$$T_{B,C} = 84^\circ\text{C}$$

$$T_K = 79^\circ\text{C}$$

$$T (181-N) = 3.7^\circ\text{C}$$

$$A_t = 33,500 \text{ ft}^2$$

$$T_m = 4.05^\circ\text{C} \quad T_K = 69^\circ\text{C}$$

$$T_{PR} = 3.6^\circ\text{C}$$

$$T_B = 73^\circ\text{C}$$

$$T_c = 77^\circ\text{C}$$

$$T (181-N) = 3.5^\circ\text{C}$$

TABLE II-8

RIVER TEMPERATURE TRAVERSES - 100 YARDS BELOW 100-N

River Mile: 379.6

Date: 6-5-64

Time: 0914

Reactors Operating: B,KE,KW

River Flow Rate: 325,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
5	5.5	15.3
100	41	12.6
125	39.5	12.65
150	35.5	12.75
175	33.5	12.9
200	-	12.95
225	32.5	13.0
250	37.5	12.95
275	41	12.9
300	45.5	12.75
325	46.5	12.65
350	47.5	12.6
375	46.5	12.5
400	41	12.5
425	35.5	12.5
450	26.5	12.5
475	24.5	12.5
500	22	12.55
525	19	12.55
550	17	12.6
575	12	-
600	7.5	12.7
620	0	-

$$A_t = 56,000 \text{ ft}^2$$

$$T_m = 12.85^\circ\text{C}$$

$$T_{PR} = 12.0^\circ\text{C}$$

$$T_B = 87^\circ\text{C}$$

$$T_K = 92^\circ\text{C}$$

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TABLE II-9

RIVER TEMPERATURE TRAVERSES - 400 YARDS BELOW 100-N

River Mile: 379.4

Date: 8-27-64

Time: 1142

Reactors Operating: C,N

River Flow Rate: 110,000 cfs (est.)

Date: 8-27-64

Time: 1148

Reactors Operating: C,N

River Flow Rate: 110,000 cfs (est.)

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	5.5	19.3	3
25	12	19.0	3
50	18	18.9	3
85	25.5	18.45	0
110	28	18.4	0
135	25.5	18.4	2
160	24.5	19.1	49
185	22.5	19.1	60
210	21	18.8	22
235	23.5	18.4	3
260	-	18.25	1
285	30.5	18.15	1
310	31.5	18.0	1
335	31.5	18.0	0
360	27	18.0	0
385	17	17.95	0
410	13	17.9	0
435	10.5	17.9	0
460	18	17.9	0
485	7.5	17.9	0
505	7.5	18.0	0
520	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	3.5	18.9	2
25	8.5	18.7	2
50	17	18.5	1
85	26.5	18.35	1
110	28	18.5	2
135	26.5	18.6	4
160	25.5	19.0	29
185	23.5	19.35	65
210	22	19.3	73
235	21	18.9	50
260	22.5	18.4	1
285	30.0	18.1	0
310	31.5	18.1	0
335	30.5	18.05	0
360	30.5	18.0	0
385	29.0	17.9	0
410	21	17.9	0
435	14	17.9	0
460	9.5	17.9	0
485	7.5	17.95	0
505	7.5	18.0	0
520	0	-	0

$$A_t = 32,000 \text{ ft}^2$$

$$T_m = 18.35^\circ\text{C}$$

$$T_{PR} = 17.3^\circ\text{C}$$

$$T_c = 88^\circ\text{C}$$

$$T_N = 25^\circ\text{C (est.)}$$

$$A_t = 32,900 \text{ ft}^2$$

$$T_m = 18.4^\circ\text{C}$$

$$T_{PR} = 17.3^\circ\text{C}$$

TABLE II-9
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - 400 YARDS BELOW 100-N
River Mile: 379.4

Date: 9-1-64
Time: 1150
Reactors Operating: B,C*,KW
River Flow Rate: 105,000 cfs (est.)

Date: 9-1-64
Time: 1200
Reactors Operating: B,C*,KW
River Flow Rate: 105,000 cfs (est.)

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	4.5	18.0	8
25	5.5	18.0	9
50	7.5	17.9	8
90	24.5	17.6	6
115	28	17.8	4
140	26.5	17.8	1
190	23.5	17.8	-
215	22	17.55	1
240	24.5	17.35	1
265	23.5	17.2	0
290	32.5	17.2	0
315	32.5	17.2	0
340	32.5	17.15	0
365	32.5	17.05	0
390	20	17.0	0
415	15	17.0	1
440	12	16.95	1
465	9.5	16.9	0
490	7.5	16.95	0
515	7.5	17.1	0
530	3.5	17.2	0
535	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	4.5	18.1	9
25	7.5	18.0	8
50	20	17.7	7
90	27	17.5	6
115	22.5	17.5	2
140	26	17.6	1
190	22.5	17.8	-
215	22	17.75	2
240	22.5	17.7	2
265	29	17.5	2
290	31.5	17.3	2
315	32.5	17.2	2
340	32.5	17.15	2
365	22.5	17.1	2
390	20	17.0	2
415	12	17.0	1
440	10.5	17.0	1
465	8.5	17.0	1
490	6.5	17.0	1
515	4.5	17.3	1
530	-	17.3	0
535	0	-	0

$$A_t = 32,300 \text{ ft}^2$$

$$T_m = 17.4^\circ\text{C}$$

$$T_{PR} = 16.3^\circ\text{C}$$

$$T_B = 86^\circ\text{C}$$

$$T_c = 70^\circ\text{C (est.)}$$

$$T_{KW} = 88^\circ\text{C}$$

$$A_t = 31,200 \text{ ft}^2$$

$$T_m = 17.4^\circ\text{C}$$

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TABLE II-9
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - 400 YARDS BELOW 100-N
River Mile: 379.4

Date: 9-4-64
Time: 1038
Reactors Operating: KW,N
River Flow Rate: 65,000 cfs (est.)

Date: 9-4-64
Time: 1043
Reactors Operating: KW,N
River Flow Rate: 65,000 cfs (est.)

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	2	17.85
25	7.5	18.35
50	14	18.2
75	22.5	17.9
100	24.5	17.75
125	22.5	18.15
150	20	18.75
175	17	19.05
200	17	18.5
225	22.5	17.95
250	29	17.55
275	28	17.25
300	28	17.05
325	26	16.8
350	17	16.7
375	10.5	16.65
400	7.5	16.6
425	4.5	16.6
450	3.5	16.65
465	3.5	16.7
490	0	-

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	2	18.65
25	4.5	18.4
50	13	18.2
75	22.5	17.85
100	24.5	17.9
125	23.5	18.4
150	21	18.85
175	19	19.0
200	18	18.6
225	21.5	17.9
250	28	17.3
275	28	16.9
300	28	16.75
325	29	16.65
350	21	16.6
375	13	16.55
400	9.5	16.55
425	6.5	16.55
450	4.5	16.6
465	3.5	16.75
490	0	-

$$A_t = 24,100 \text{ ft}^2$$

$$T_m = 17.65^\circ\text{C}$$

$$T_{PR} = 16.0^\circ\text{C}$$

$$T_{KW} = 88^\circ\text{C}$$

$$T_N = 30^\circ\text{C (est.)}$$

$$A_t = 25,200 \text{ ft}^2$$

$$T_m = 17.55^\circ\text{C}$$

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TABLE II-9
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - 400 YARDS BELOW 100-N
River Mile: 379.4

Date: 11-8-64

Time: 1040

Reactors Operating: B,C,KE,KW,N

River Flow Rate: 40,000 cfs

Date: 11-8-64

Time: 1050

Reactors Operating: B,C,KE,KW,N

River Flow Rate: 40,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	C Effluent Units
25	-	-	-
50	7.5	16.7	11
75	16	16.5	10
100	20	16.3	10
125	19	15.7	10
150	18	15.6	11
175	17	15.6	11
200	16	15.5	11
225	15	15.1	11
250	22.5	15.4	11
275	24.5	15.0	11
300	24.5	14.6	11
325	24.5	14.0	11
350	23.5	13.3	11
375	20	12.9	9
400	14	12.5	7
425	6.5	-	3
450	3.5	12.0	0
460	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	C Effluent Units
25	4	-	11
50	13	16.6	11
75	19	16.6	11
100	20	16.3	11
125	19	15.9	11
150	18	15.5	10
175	18	15.3	9
200	16	15.35	8
225	16	15.4	8
250	20	15.3	7
275	23.5	14.8	7
300	24.5	14.2	6
325	24.5	13.9	5
350	22.5	13.5	3
375	22.5	13.1	1
400	18	12.7	0
425	9.5	12.2	0
450	-	12.0	0
460	0	-	0

$$A_t = 20,600 \text{ ft}^2$$

$$T_m = 14.85^\circ\text{C}$$

$$T_{PR} = 12.0^\circ\text{C}$$

$$T_B = 84^\circ\text{C}$$

$$T_C = 88^\circ\text{C}$$

$$T_K = 84^\circ\text{C}$$

$$T_N = 45^\circ\text{C (est.)}$$

$$A_t = 22,600 \text{ ft}^2$$

$$T_m = 14.8^\circ\text{C}$$

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TABLE II-9
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - 400 YARDS BELOW 100-N
River Mile: 379.4

Date: 11-28-64

Time: 0940

Reactors Operating: B,C,KE,KW,N

River Flow Rate: 41,000 cfs

Date: 11-28-64

Time: 1000

Reactors Operating: B,C,KE,KW,N

River Flow Rate: 41,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KW Effluent Units
5	3.5	12.1	30
25	5.5	12.55	30
50	10.5	12.6	30
80	20	12.55	31
105	-	-	-
130	18	12.2	31
155	18	-	30
180	16	11.85	28
205	16	11.65	27
230	15	11.45	26
255	20	11.3	25
280	24.5	11.05	23
305	24.5	10.7	20
330	24.5	10.5	17
355	24.5	10.1	14
380	22	9.75	12
405	12	9.35	8
430	9.5	9.1	6
455	3.5	-	4
480	3.5	8.8	1
500	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KW Effluent Units
5	3.5	12.5	30
25	5.5	-	30
50	10.5	-	30
80	18	12.7	30
105	20	12.7	27
130	18	12.55	24
155	18	12.2	21
180	17	11.9	18
205	15	-	17
230	15	11.5	15
255	20	11.4	15
280	26.5	11.2	12
305	24.5	10.9	9
330	24.5	10.6	6
355	24.5	10.2	2
380	20	9.85	0
405	12	9.5	0
430	5.5	9.3	0
455	4.5	9.1	0
480	3.5	8.8	0
500	0	-	0

$$A_t = 23,100 \text{ ft}^2$$

$$T_m = 11.15^\circ\text{C}$$

$$T_{PR} = 9.4^\circ\text{C}$$

$$T_B = 82^\circ\text{C}$$

$$T_c = 86^\circ\text{C}$$

$$T_K = 83^\circ\text{C}$$

$$T_N = 25^\circ\text{C (est.)}$$

$$T (181-N) = 12.1^\circ\text{C}$$

$$A_t = 22,800 \text{ ft}^2$$

$$T_m = 11.3^\circ\text{C}$$

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TABLE II-9
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - 400 YARDS BELOW 100-N
River Mile: 379.4

Date: 3-18-65

Time: 1200

Reactors Operating: B,C,KE,KW

River Flow Rate: 95,000 cfs

Date: 3-18-65

Time: 1210

Reactors Operating: B,C,KE,KW

River Flow Rate: 95,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KW Effluent Units
5	2	6.4	10
25	12	6.2	9
50	12	6.2	9
75	25.5	6.3	14
100	25.5	6.25	14
125	25.5	6.3	14
150	24.5	6.25	14
175	24.5	6.2	14
200	20	6.15	14
225	26.5	6.1	14
250	31.5	6.05	14
275	23.5	6.1	13
300	32.5	5.8	10
325	31.5	5.4	6
350	29	5.1	5
375	23.5	5.05	5
400	15	4.9	3
425	10.5	4.8	1
450	7.5	4.8	1
475	6.5	4.8	1
500	5.5	4.8	0
515	3.5	5.1	0
520	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KW Effluent Units
5	3.5	6.3	10
25	10.5	6.0	10
50	18	5.9	10
75	22.5	6.0	11
100	25.5	6.15	14
125	26.5	6.15	14
150	24.5	6.1	14
175	23.5	6.1	14
200	22	5.95	14
225	20	5.85	13
250	34.5	5.7	13
275	33.5	5.2	11
300	31.5	5.1	8
325	31.5	5.0	5
350	29	4.9	3
375	20	4.9	2
400	24.5	4.9	1
425	15	4.8	1
450	13	4.8	1
475	14	4.9	1
500	5.5	4.8	1
515	3.5	5.15	0
520	0	-	0

$$A_t = 31,500 \text{ ft}^2$$

$$T_m = 5.8^\circ\text{C}$$

$$T_{PR} = 4.2^\circ\text{C}$$

$$T_B = 86^\circ\text{C}$$

$$T_c = 87^\circ\text{C}$$

$$T_K = 81^\circ\text{C}$$

$$T (181-N) = 5.8^\circ\text{C}$$

$$A_t = 33,400 \text{ ft}^2$$

$$T_m = 5.55^\circ\text{C}$$

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TABLE II-9
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - 400 YARDS BELOW 100-N
River Mile: 379.4

Date: 3-31-66

Time: 1055

Reactors Operating: B*,C,KE,KW,N

River Flow Rate: 85,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
5	3.5	10.7
25	8.5	9.5
50	24.5	8.3
85	30.5	7.4
110	33.5	7.5
135	29	8.0
160	26.5	11.3
185	24.5	11.1
210	23.5	9.5
235	30	10.1
260	37.5	7.0
285	35.5	6.6
310	35.5	6.1
333	37.5	5.9
360	24.5	5.9
385	15	5.9
410	12	5.9
435	7.5	6.0
460	8.5	6.2
485	6.5	7.3
490	3.5	7.7
495	0	-

$$A_t = 34,600 \text{ ft}^2$$

$$T_m = 7.76^\circ\text{C}$$

$$T_{PR} = 5.7^\circ\text{C}$$

$$T_B = 40^\circ\text{C (est.)}$$

$$T_c = 88^\circ\text{C}$$

$$T_K = 81^\circ\text{C}$$

$$T_N = 54^\circ\text{C}$$

$$T_D = 90^\circ\text{C}$$

$$T' (181-N) = 8.0^\circ\text{C}$$

TABLE II-10

RIVER TEMPERATURE TRAVERSES - ONE-HALF MILE BELOW N

River Mile: 379.2

Date: 2-20-66

Time: 0800

Reactors Operating: B,C,KE,KW,N

River Flow Rate: 39,000 cfs

Date: 2-20-66

Time: 0810

Reactors Operating: B,C,KE,KW,N

River Flow Rate: 39,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	2	7.95	2
25	8	7.65	20
50	14	8.2	53
80	19	8.35	49
130	19	8.65	54
180	16	8.85	57
230	14	8.05	51
280	24	6.8	17
330	23	5.15	0
380	18	4.45	0
430	5	4.2	0
465	2	4.15	0
485	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	2	7.95	4
25	5	7.85	20
50	10	8.15	33
80	19	8.45	51
130	19	8.45	53
180	17	8.85	61
230	15	8.25	53
280	23	7.05	27
330	23	5.25	0
380	18	4.45	0
430	6	4.2	0
465	2	4.15	0
485	0	-	0

$$A_t = 21,900 \text{ ft}^2$$

$$T_m = 7.0^\circ\text{C}$$

$$T_{PR} = 4.4^\circ\text{C}$$

$$T_{B,C} = 85^\circ\text{C}$$

$$T_{KE} = 81^\circ\text{C}$$

$$T_N = 53^\circ\text{C}$$

$$T(131-N) = 5.4^\circ\text{C}$$

$$A_t = 21,700 \text{ ft}^2$$

$$T_m = 7.0^\circ\text{C}$$

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TABLE II-10
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE-HALF MILE BELOW N
River Mile: 379.2

Date: 3-31-66

Time: 1145

Reactors Operating: B,C,KE,KW,N

River Flow Rate: 90,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
5	3.5	9.8
25	12	8.6
70	26.5	7.3
90	30	7.4
115	30	7.8
140	28	8.4
165	27	10.0
190	26.5	10.1
215	24.5	9.8
240	23.5	7.6
265	30.5	7.1
290	35.5	6.9
315	36.5	6.4
340	36.5	6.1
365	32.5	6.0
390	23.5	6.0
415	12	6.0
440	5.5	6.5
505	3.5	7.5
515	0	-

$$A_t = 34,500 \text{ ft}^2$$

$$T_m = 7.55^\circ\text{C}$$

$$T_{PR} = 5.7^\circ\text{C}$$

$$T_B = 40^\circ\text{C (est.)}$$

$$T_c = 88^\circ\text{C}$$

$$T_K = 81^\circ\text{C}$$

$$T_N = 54^\circ\text{C}$$

$$T_D = 90^\circ\text{C}$$

$$T (181-N) = 8.0^\circ\text{C}$$

TABLE II-11

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW N
River Mile: 378.7

Date: 2-20-66

Time: 0825

Reactors Operating: B,C,KE,N

River Flow Rate: 39,000 cfs

Date: 2-20-66

Time: 0837

Reactors Operating: B,C,KE,N

River Flow Rate: 39,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	2	6.95	6
25	5	7.6	19
50	8	7.85	37
70	11	8.0	33
120	13	8.0	37
170	17	8.05	34
220	15	8.45	48
270	16	7.35	21
320	19	6.8	4
370	20	5.4	0
420	8	4.85	0
470	6	4.45	0
500	2	4.25	0
515	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	2	6.95	14
25	4	7.65	22
50	6	7.95	30
70	11	8.15	35
120	15	8.15	42
170	16	8.05	37
220	16	8.35	51
270	15	7.05	29
320	19	5.9	10
370	20	4.95	0
420	8	4.5	0
470	7	4.35	0
500	-	4.25	0
515	0	-	0

$$A_t = 19,100 \text{ ft}^2$$

$$T_m = 7.0^\circ\text{C}$$

$$T_{PR} = 4.4^\circ\text{C}$$

$$T_{B,C} = 85^\circ\text{C}$$

$$T_{KE} = 81^\circ\text{C}$$

$$T_N = 53^\circ\text{C}$$

$$A_t = 19,200 \text{ ft}^2$$

$$T_m = 6.9^\circ\text{C}$$

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TABLE II-11
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW N
River Mile: 378.7

Date: 3-31-66
Time: 1205
Reactors Operating: B,C,KE,KW,N
River Flow Rate: 90,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
5	4.5	10.0
25	9.5	9.1
40	12	8.2
60	17	7.6
85	21	7.4
110	28	7.4
135	27	7.8
160	26.5	8.1
185	26.5	9.3
210	27	9.5
235	25.5	8.2
260	26.5	7.1
285	31.5	6.8
310	32.5	6.5
335	33.5	6.2
360	33.5	6.1
385	30	6.0
410	22.5	6.0
435	18	-
460	12	6.1
485	7.5	6.4
510	4.5	6.9
525	3.5	7.6
540	0	-

$$A_t = 35,100 \text{ ft}^2$$

$$T_N = 54^\circ\text{C}$$

$$T_m = 7.24^\circ\text{C}$$

$$T_D = 90^\circ\text{C}$$

$$T_{PR} = 5.7^\circ\text{C}$$

$$T_B = 40^\circ\text{C (est.)}$$

$$T_c = 88^\circ\text{C}$$

$$T_K = 81^\circ\text{C}$$

TABLE II-12

RIVER TEMPERATURE TRAVERSES - ABOVE 181-D
River Mile: 378.0

Date: 6-5-64
Time: 0940
Reactors Operating: B,KE,KW
River Flow Rate: 320,000 cfs

Date: 8-4-64
Time: 1440
Reactors Operating: B,C*,KE,KW,N
River Flow Rate: 185,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C
60	23.5	13.0
85	22.5	13.05
110	23.5	13.1
135	24.5	13.15
160	27	13.3
185	29	13.4
210	28	13.5
235	28	13.6
260	24.5	13.65
285	23.5	13.7
310	24.5	13.65
335	25.5	13.6
360	26.5	13.6
385	26.5	13.45
410	25.5	13.4
435	25.5	13.35
460	24.5	13.3
485	30	13.3
510	31.5	13.3
535	26.5	13.3
560	20	13.3
585	17	13.3
610	10.5	13.3
635	4.5	13.3
645	0	-

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	8.5	17.55
25	16	17.35
50	19	17.3
75	17	17.35
100	17	17.45
125	19	17.6
150	22	17.85
175	22.5	18.1
200	22	18.0
225	21	17.85
250	18	17.65
275	17	17.45
300	19	17.25
325	21	17.1
350	21	17.0
375	21	16.95
400	19	16.9
425	18	16.9
450	23.5	16.9
475	24.5	16.95
500	22.5	17.1
525	15	-
545	6.5	-
565	0	-

$$A_t = 41,900 \text{ ft}^2$$

$$T_m = 13.4^\circ\text{C}$$

$$T_{PR} = 12.0^\circ\text{C}$$

$$T_B = 87^\circ\text{C}$$

$$T_K = 92^\circ\text{C}$$

$$A_t = 29,300 \text{ ft}^2$$

$$T_N = 25^\circ\text{C}$$

$$T_m = 17.35^\circ\text{C}$$

$$T (181-D) = 17.45^\circ\text{C}$$

$$T_{PR} = 16.4^\circ\text{C}$$

$$T_B = 84^\circ\text{C}$$

$$T_K = 87^\circ\text{C}$$

$$T_C = 70^\circ\text{C (est.)}$$

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TABLE II-12
(CONTINUED)RIVER TEMPERATURE TRAVERSES - ABOVE 181-D
River Mile: 378.0

Date: 8-6-64

Time: 0940

Reactors Operating: B,C,KE,KW

River Flow Rate: 155,000 cfs

Date: 8-6-64

Time: 1050

Reactors Operating: B,C,KE,KW

River Flow Rate: 155,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
25	13.5	17.45
60	16.5	17.5
85	16	17.55
110	15.5	17.65
135	16.5	17.8
160	19	17.85
185	19.5	17.95
210	20.5	18.0
235	20.5	17.95
260	18.5	17.9
285	17.5	17.7
310	18	17.55
335	17	17.5
360	19	17.3
385	19	17.2
410	17	17.1
435	20.5	16.95
460	23.5	16.95
485	23.5	-
510	23	16.85
535	16	16.8
560	11	16.8
580	0	-

$$A_t = 29,900 \text{ ft}^2$$

$$T_m = 17.45^\circ\text{C}$$

$$T_{PR} = 16.4^\circ\text{C}$$

$$T_{B,C} = 85^\circ\text{C}$$

$$T_K = 88^\circ\text{C}$$

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
25	10.5	17.8
60	16	17.65
85	15	17.7
110	15	17.8
135	17	17.95
160	20	18.1
185	20	18.15
210	20	18.1
235	20	18.0
260	17	17.9
285	15	17.85
310	17	17.75
335	19	17.65
360	19	17.55
385	19	17.4
410	17	17.35
435	17	17.25
460	17	17.2
485	22	17.15
510	23.5	17.15
535	22.5	17.1
560	12	-
580	0	-

$$A_t = 28,000 \text{ ft}^2$$

$$T_m = 17.6^\circ\text{C}$$

$$T_{PR} = 16.4^\circ\text{C}$$

$$T_{B,C} = 86^\circ\text{C}$$

$$T_K = 88^\circ\text{C}$$

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TABLE II-12
(CONTINUED)RIVER TEMPERATURE TRAVERSES - ABOVE 181-D
River Mile: 378.0

Date: 8-27-64
Time: 1200
Reactors Operating: C,N
River Flow Rate: 100,000 cfs (est.)

Date: 8-27-64
Time: 1215
Reactors Operating: C,N
River Flow Rate: 100,000 cfs (est.)

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	3.5	19.1	2
25	10.5	18.9	2
40	-	-	2
65	13	-	1
90	13	18.4	1
115	13	18.4	2
140	16	18.5	9
165	16	18.6	20
190	16	18.7	28
215	16	18.7	31
240	15	18.6	18
265	13	18.4	7
290	13	18.25	2
315	15	18.2	1
340	15	18.15	1
365	15	18.1	1
390	15	18.1	1
415	15	18.05	0
440	13	18.0	0
465	15	18.0	0
490	20	18.05	0
515	20	18.1	0
540	17	18.1	0
565	5.5	18.3	0
575	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	3.5	18.8	2
25	12	18.7	2
40	12	18.5	1
65	12	18.45	1
40	10.5	18.4	1
110	13	18.4	2
140	15	18.5	8
165	16	18.6	19
190	16	18.7	29
215	16	18.7	28
240	13	18.35	13
265	13	18.25	6
290	13	18.15	2
315	15	18.1	1
340	15	18.1	0
365	15	18.0	0
390	13	18.0	0
415	13	18.0	0
440	15	18.05	0
465	20	18.0	0
490	20	18.1	0
515	15	18.15	0
540	6.5	18.2	0
565	5.5	-	0
575	0	-	0

$$A_t = 24,400 \text{ ft}^2$$

$$T_m = 18.35^\circ\text{C}$$

$$T_{PR} = 17.3^\circ\text{C}$$

$$T_c = 88^\circ\text{C}$$

$$T_N = 25^\circ\text{C (est.)}$$

$$A_t = 22,700 \text{ ft}^2$$

$$T_m = 18.25^\circ\text{C}$$

$$T_{PR} = 17.3^\circ\text{C}$$

$$T_c = 88^\circ\text{C}$$

$$T_N = 25^\circ\text{C (est.)}$$

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TABLE II-12
(CONTINUED)RIVER TEMPERATURE TRAVERSES - ABOVE 181-D
River Mile: 378.0

Date: 9-1-64

Time: 1245

Reactors Operating: B,C*,KW

River Flow Rate: 105,000 cfs (est.)

Date: 11-8-64

Time: 1100

Reactors Operating: B,C,KE,KW,N

River Flow Rate: 40,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	4.5	18.3
25	10.5	18.15
50	14	17.85
75	12.5	17.7
100	12.5	17.7
125	14	17.75
150	16	17.9
175	18	17.9
200	17.5	17.9
225	17	17.9
250	17	17.8
275	15	17.8
300	13.5	17.7
325	15	17.6
350	16	17.55
375	16	17.4
400	15.5	17.35
425	15	17.3
450	14.5	17.25
475	15	17.2
500	19	17.2
525	21.5	17.2
550	18	17.15
575	9	17.2
600	5	17.4
625	4	17.5
635	0	-
(Long)		

$$A_t = 26,700 \text{ ft}^2 \quad T_{KW} = 88^\circ\text{C}$$

$$T_m = 17.7^\circ\text{C}$$

$$T_{PR} = 16.3^\circ\text{C}$$

$$T_B = 86^\circ\text{C}$$

$$T_c = 70^\circ\text{C (est.)}$$

Distance from Plant Shore-yds.	Depth feet	Temp. °C	C Effluent Units
5	5.5	16.6	6
30	7.5	16.1	6
55	7.5	16.0	6
80	7.5	15.85	6
105	8.5	15.65	6
130	9.5	15.55	6
155	10.5	15.35	7
180	12	15.25	7
205	12	14.95	7
230	8.5	14.7	7
255	9.5	14.5	7
280	9.5	14.35	7
305	10.5	14.3	7
330	10.5	14.1	7
355	11.5	13.95	7
380	11.5	13.8	7
405	10.5	13.6	7
430	9.5	13.45	6
455	7.5	13.35	6
480	8.5	13.2	5
505	7.5	13.05	5
530	13	12.55	4
555	9.5	-	3
580	3.5	11.65	0
590	0	-	0
(Long)			

$$A_t = 16,200 \text{ ft}^2 \quad T_K = 86^\circ\text{C}$$

$$T_m = 14.3^\circ\text{C} \quad T_N = 45^\circ\text{C (est.)}$$

$$T_{PR} = 12.0^\circ\text{C}$$

$$T(181-D) = 16.2^\circ\text{C}$$

$$T_B = 84^\circ\text{C}$$

$$T_c = 88^\circ\text{C}$$

TABLE II-12
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ABOVE 181-D

River Mile: 378.0

Date: 11-28-64

Time: 1020

Reactors Operating: B,C,KE,KW,N

River Flow Rate: 41,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KW Effluent Units
5	3.5	12.5	24
30	8	12.6	29
55	6.5	12.7	29
80	6.5	12.7	29
105	7.5	12.65	29
130	9.5	12.5	28
155	11.5	12.3	26
180	12	12.0	25
205	11.5	11.75	23
230	10	11.6	21
255	8.0	11.4	20
280	8.5	11.3	19
305	10	11.25	18
330	10.5	11.05	17
355	10.5	10.85	15
380	8	10.7	14
405	8	10.55	13
430	8.5	10.45	12
455	14.5	10.35	10
480	14	10.0	8
505	12.5	9.5	5
530	2	8.9	0
535	0	-	0

$$A_t = 14,900 \text{ ft}^2$$

$$T_K = 83^\circ\text{C}$$

$$T_m = 11.3^\circ\text{C}$$

$$T_N = 25^\circ\text{C (est.)}$$

$$T_{PR} = 9.4^\circ\text{C}$$

$$T (181-D) = 12.4^\circ\text{C}$$

$$T_B = 82^\circ\text{C}$$

$$T_c = 86^\circ\text{C}$$

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TABLE 11-12
(CONTINUED)

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RIVER TEMPERATURE TRAVERSES - ABOVE 181-D

River Mile: 378.0

Date: 3-18-65

Time: 1230

Reactors Operating: B,C,KE,KW

River Flow Rate: 95,000 cfs

Date: 3-18-65

Time: 1240

Reactors Operating: B,C,KE,KW

River Flow Rate: 95,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	B Effluent Units
5	3	6.5	13
25	8.5	6.45	13
50	10	6.3	12
75	12	6.2	12
100	10	6.15	13
125	12	6.15	13
150	15	6.05	13
175	16	6.0	12
200	16	5.95	12
225	14	5.95	12
250	12	5.95	12
275	12	5.95	12
300	14	5.85	11
325	15	5.8	11
350	15	5.7	10
375	14	5.55	9
400	12	5.35	7
425	13	5.25	6
450	17	5.15	5
475	18	5.1	5
500	17	5.0	4
525	8.5	5.0	2
550	3.5	5.2	0
555	0	-	0

$$A_t = 21,200 \text{ ft}^2 \quad T_c = 87^\circ\text{C}$$

$$T_m = 5.7^\circ\text{C} \quad T_K = 81^\circ\text{C}$$

$$T_{PR} = 4.2^\circ\text{C}$$

$$T_B = 86^\circ\text{C}$$

Distance from Plant Shore-yds.	Depth feet	Temp. °C	B Effluent Units
5	3.5	6.5	13
25	6.5	6.45	13
50	8.5	6.25	13
75	10.5	6.0	13
100	10.5	6.0	13
125	15	6.0	13
150	16	5.95	13
175	16	5.95	13
200	17	5.95	13
225	13	5.9	13
250	12	5.8	13
275	14	5.6	11
300	14	5.45	9
325	15	5.3	8
350	15	5.2	7
375	14	5.1	6
400	14	5.05	6
425	19	4.95	5
450	18	4.9	3
475	16	4.9	1
500	22	5.0	1
525	12	5.2	0
550	3.5	-	0
555	0	-	0

$$A_t = 22,600 \text{ ft}^2$$

$$T_m = 5.5^\circ\text{C}$$

$$T_{PR} = 4.2^\circ\text{C}$$

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TABLE II-12
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ABOVE 181-D
River Mile: 378.0

Date: 4-8-65
Time: 1120
Reactors Operating: B,C,KE,KW,N
River Flow Rate: 65,000 cfs (est.)

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	2	9.75
40	14	8.55
90	12	8.05
140	17	7.85
190	17	7.6
240	14	7.5
290	14	7.25
340	15	6.95
390	14	6.65
440	18	6.4
490	19	6.4
540	2	7.05
545	0	-

$$A_t = 22,800 \text{ ft}^2 \quad T_c = 87^\circ\text{C}$$

$$T_m = 7.28^\circ\text{C} \quad T_K = 81^\circ\text{C}$$

$$T_{PR} = 5.6^\circ\text{C} \quad T_N = 20^\circ\text{C}$$

$$T_B = 85^\circ\text{C}$$

Date: 2-13-66
Time: 0715
Reactors Operating: C,KE,N
River Flow Rate: 42,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	3	6.8
40	9	7.15
65	8	7.1
90	9	7.1
115	13	7.0
140	-	6.9
190	-	6.9
215	8	6.85
240	9	6.6
265	8	6.3
290	10	6.0
315	10	5.7
340	11	5.25
365	10.5	5.15
390	10	5.1
415	9	5.9
440	10	4.8
465	15	4.65
490	14	4.45
515	6	4.2
525	3	4.2
530	0	-

$$A_t = 14,900 \text{ ft}^2$$

$$T_m = 5.95^\circ\text{C}$$

$$T_{PR} = 4.6^\circ\text{C}$$

$$T_c = 77^\circ\text{C}$$

$$T_{KE} = 79^\circ\text{C}$$

$$T_N = 53^\circ\text{C}$$

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TABLE II-12
(CONTINUED)

RIVER TEMPERATURE TRAVERSES -ABOVE 181-D
River Mile: 378.0

Date: 2-20-66
Time: 0905
Reactors Operating: B,C,KE,N
River Flow Rate: 38,000 cfs

Date: 2-20-66
Time: 0915
Reactors Operating: B,C,KE,N
River Flow Rate: 38,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	2	7.45	19
25	7	7.8	29
50	8	8.05	38
60	8	8.05	39
90	6	8.05	40
140	10	8.15	39
190	10	8.4	50
215	-	-	-
240	8	7.55	26
290	8	6.95	15
340	10	6.2	6
390	10	5.65	2
440	7	5.15	0
490	13	4.85	0
540	6	4.5	0
550	2	4.45	0
555	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	2	7.65	23
25	8	7.85	25
50	8	-	-
60	8	8.15	36
90	7	8.15	41
140	9	8.15	39
190	11	8.3	46
215	11	7.95	49
240	9	7.55	39
290	9	6.55	20
340	10	5.9	11
390	9	5.2	2
440	9	4.95	1
490	12	4.85	0
540	5	4.45	0
550	-	4.45	0
555	0	-	0

$$A_t = 14,100 \text{ ft}^2$$

$$T_m = 6.7^\circ\text{C}$$

$$T_{PR} = 4.5^\circ\text{C}$$

$$T(181-D) = 7.85^\circ\text{C} \quad 29 \text{ Units}$$

$$T_{B,C} = 85^\circ\text{C}$$

$$T_{KE} = 81^\circ\text{C}$$

$$T_N = 53^\circ\text{C}$$

$$A_t = 14,600 \text{ ft}^2$$

$$T_m = 6.6^\circ\text{C}$$

TABLE II-12
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ABOVE 181-D
River Mile: 378.0

Date: 3-17-66
Time: 1040
Reactors Operating: B,C,KE,KW,N
River Flow Rate: 68,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
5	4	7.95
25	9	7.55
40	11	7.35
90	10	7.65
140	14	8.2
190	15	7.9
240	11	6.8
290	11	6.0
340	13	5.6
390	12	5.05
440	11	4.85
490	16	4.7
540	4	4.65
550	0	-

$$A_t = 18,900 \text{ ft}^2$$

$$T_m = 6.4^\circ\text{C}$$

$$T_{PR} = 4.4^\circ\text{C}$$

$$T_{B,C} = 87^\circ\text{C}$$

$$T_K = 79^\circ\text{C}$$

$$T_N = 55^\circ\text{C}$$

Date: 3-31-66
Time: 1300
Reactors Operating: B,C,KE,KW,N
River Flow Rate: 90,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
5	3.5	8.9
40	17	7.7
65	13	7.5
90	15	7.5
140	21	8.3
165	21	9.1
190	21	8.9
215	14	7.7
240	17	7.3
265	18	7.1
290	20	6.9
340	20	6.5
365	16	6.4
390	17	6.3
415	22	6.2
440	24.5	6.1
465	20	-
490	16	6.2
515	10.3	6.4
530	3.5	7.5
540	0	-

$$A_t = 27,100 \text{ ft}^2$$

$$T_m = 7.15^\circ\text{C}$$

$$T_{PR} = 5.7^\circ\text{C}$$

$$T_B = 40^\circ\text{C (est.)}$$

$$T_C = 88^\circ\text{C}$$

$$T_K = 81^\circ\text{C}$$

$$T_N = 54^\circ\text{C}$$

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TABLE II-12
(CONTINUED)RIVER TEMPERATURE TRAVERSES - ABOVE 181-D
River Mile: 378.0

Date: 4-3-66

Time: 1320

Reactors Operating: B,C,KE,KW,N

River Flow Rate: 38,000 cfs

Date: 4-3-66

Time: 1340

Reactors Operating: B,C,KE,KW,N

River Flow Rate: 38,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KE Effluent Units
5	3	-	30
20	9	12.8	31
45	9	12.7	31
70	9	12.5	32
95	11	11.9	33
120	15	11.7	33
145	15	11.5	33
170	15	11.7	31
195	15	11.0	28
220	13	10.6	26
245	10	10.2	26
270	11	10.0	25
295	14	10.0	24
320	16	9.5	23
345	14	9.3	22
370	14	8.8	20
395	12	8.6	18
420	12	8.5	17
445	16	8.4	15
470	21	8.1	13
495	18	7.9	10
520	6	-	3
525	2	9.0	2
535	0	-	-

$$A_t = 20,500 \text{ ft}^2$$

$$T_m = 10.0^\circ\text{C}$$

$$T_{PR} = 6.4^\circ\text{C}$$

$$T_{B,C} = 87^\circ\text{C}$$

$$T_K = 83^\circ\text{C}$$

$$T_N = 54^\circ\text{C}$$

$$181-D = 30 \text{ Units}$$

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KE Effluent Units
5	3	12.9	30
20	11	12.9	32
45	9	12.8	32
70	9	12.5	33
95	11	12.3	34
120	16	12.0	35
145	15	11.6	33
170	16	11.4	32
195	16	11.3	31
220	13	11.2	30
245	13	10.9	28
270	13	10.6	26
295	13	9.9	24
320	13	9.8	23
345	13	9.6	23
370	17	9.0	20
395	16	8.7	17
420	13	8.5	15
445	21	8.2	13
470	19	8.0	9
495	13	7.9	6
520	8	8.0	4
525	2	9.0	2
535	0	-	-

$$A_t = 21,000 \text{ ft}^2$$

$$T_m = 9.65^\circ\text{C}$$

$$T_{PR} = 6.4^\circ\text{C}$$

TABLE II-14

RIVER TEMPERATURE TRAVERSES - ONE-HALF MILE BELOW 1904-DR
River Mile: 376.8

Date: 8-14-64

Time: 1020

Reactors Operating: B,C,KE,KW*,D,DR

River Flow Rate: 130,000 cfs

<u>Distance</u> <u>from Plant</u> <u>Shore-yds.</u>	<u>Depth</u> <u>feet</u>	<u>Temp.</u> <u>°C</u>	<u>DR</u> <u>Effluent</u> <u>Units</u>
70	3.5	18.1	0
95	7.5	18.1	0
120	7.5	18.0	0
145	11.5	17.85	0
170	12	17.85	0
195	18	17.85	0
220	21	17.95	1
245	34.5	18.45	24
370	49.5	18.65	23
295	49.5	18.7	22
320	49.5	18.6	15
345	52.5	18.3	4
370	55	17.85	3
395	17	17.4	0
420	16	17.15	0
470	20	17.1	0
495	12	17.1	0
515	5.5	17.5	0
520	0	-	0

$$A_t = 33,700 \text{ ft}^2$$

$$T_m = 18.1^\circ\text{C}$$

$$T_{PR} = 16.8^\circ\text{C}$$

$$T_{B,C} = 88^\circ\text{C}$$

$$T_{KE} = 88^\circ\text{C}$$

$$T_{KW} = 70^\circ \text{ (est.)}$$

$$T_{D,DR} = 88^\circ\text{C}$$

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TABLE II-14
(CONTINUED)RIVER TEMPERATURE TRAVERSES - ONE-HALF MILE BELOW 1904-DR
River Mile: 376.8

Date: 4-11-65

Time: 1015

Reactors Operating: B,C,KW,D,N

River Flow Rate: 53,000 cfs

Date: 4-11-65

Time: 1030

Reactors Operating: B,C,KW,D,N

River Flow Rate: 53,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	D Effluent Units
25	4.5	8.7	11
40	5.5	8.7	11
65	8.5	8.65	10
90	17	8.55	9
115	21	8.65	9
140	25.5	8.75	6
165	40	8.9	2
190	40	8.45	25
215	42	8.45	31
240	43	8.25	22
265	45.5	7.35	8
290	33.5	7.05	0
310	24.5	7.15	0
335	16	7.25	0
355	2	7.55	0
360	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	D Effluent Units
25	4.5	8.7	11
40	6.5	8.7	11
65	11	8.85	6
90	15	9.0	2
115	25.5	8.8	0
140	38.5	8.7	0
165	39	8.7	24
190	41	8.7	26
215	-	8.5	-
240	38.5	8.3	27
265	44.5	7.55	6
290	44	7.35	1
310	33.5	7.35	1
335	20	7.35	0
355	2	7.35	0
360	0	-	0

$$A_t = 26,600 \text{ ft}^2$$

$$T_m = 8.15^\circ\text{C}$$

$$T_{PR} = 6.0^\circ\text{C}$$

$$T_B = 86^\circ\text{C}$$

$$T_C = 88^\circ\text{C}$$

$$T_{KW} = 80^\circ\text{C}$$

$$T_D = 86^\circ\text{C}$$

$$T_N = 35^\circ\text{C}$$

$$A_t = 29,100 \text{ ft}^2$$

$$T_m = 8.2^\circ\text{C}$$

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TABLE II-14
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE-HALF MILE BELOW 1904-DR

River Mile: 376.8

Date: 3-31-66

Time: 1420

Reactors Operating: B,C,KE,KW,D,N

River Flow Rate: 90,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. C
--------------------------------------	---------------	------------

15		9.2
35		8.7
60		8.5
85		8.1
110		7.9
135	No	7.8
160	valid	7.8
185	data	8.9
210		9.1
235		9.1
260		9.0
285		8.0
310		6.6
335		6.3
360		6.3
390		6.3
415		6.4
435		6.4
440		-

A = Unknown

$T_m = 7.8^{\circ}$ (est.)

$T_{PR} = 5.7^{\circ}C$

$T_B = 40^{\circ}C$ (est.)

$T_C = 88^{\circ}C$

$T_K = 81^{\circ}C$

$T_D = 90^{\circ}C$

$T_N = 54^{\circ}C$

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TABLE II-15

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR
River Mile: 376.3

Date: 8-14-64

Time: 1030

Reactors Operating: B,C,KE,KW*,F,DR

River Flow Rate: 130,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	DR Effluent Units
15	5	18.1	0
65	32	18.3	10
90	36	18.4	12
115	32	18.5	13
140	32	18.6	14
165	26	18.6	14
190	24	18.5	13
215	22	18.5	11
240	21	18.4	11
265	22	18.35	8
290	21	18.25	7
315	20	18.15	5
340	21	17.95	5
365	22	17.9	5
390	22	17.9	6
415	23	17.95	1
440	24	17.8	0
465	22	17.6	0
515	26	17.3	0
540	13	17.3	0
560	4	17.3	0
565	0	-	0

$A_t = 38,000 \text{ ft}^2$

$T_m = 18.1^\circ\text{C}$

$T_{PR} = 16.8^\circ\text{C}$

$T_{B,C} = 88^\circ\text{C}$

$T_{KE} = 88^\circ\text{C}$

$T_{KW} = 70^\circ\text{C (est.)}$

$T_{D,DR} = 88^\circ\text{C}$

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TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR

River Mile: 376.3

Date: 8-27-64

Time: 1245

Reactors Operating: C,D,DR,N

River Flow Rate: 115,000 cfs

Date: 8-27-64

Time: 1255

Reactors Operating: C,D,DR,N

River Flow Rate: 115,000

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	3.5	19.8	5
30	8.5	19.3	2
55	22	19.2	5
80	25.5	19.1	12
105	25.5	19.0	12
130	25.5	19.1	15
155	22.5	19.1	15
180	27	19.1	16
205	20	19.1	17
230	20	19.1	17
255	18	18.95	14
280	18	18.8	9
305	18	18.7	8
330	19	18.65	8
355	19	18.55	7
380	19	18.6	8
405	18	18.5	8
430	26.5	18.45	5
470	20	18.2	1
495	10.5	18.2	1
515	4.5	18.1	0
520	0	-	0

 $A_t = 29,900 \text{ ft}^2$ $T_m = 18.85^\circ\text{C}$ $T_{PR} = 17.3^\circ\text{C}$ $T_C = 88^\circ\text{C}$ $T_{D,DR} = 88^\circ\text{C}$ $T_N = 25^\circ\text{C (est.)}$

Distance from Plant Shore-yds.	Depth feet	Temp. °C	N Effluent Units
5	4.5	19.0	2
30	15	19.0	7
55	26.5	19.0	14
80	29	18.9	14
105	25.5	18.9	14
130	24.5	18.9	12
155	22.5	18.85	9
180	22.5	18.8	9
205	22.5	18.8	11
230	22.5	18.8	13
255	22.5	18.8	12
280	24.5	18.7	11
305	24.5	18.6	10
330	25.5	18.35	16
355	26.5	18.3	5
380	26.5	18.2	3
405	26.5	18.1	2
430	29	18.1	2
470	15	18.0	1
495	7.5	18.1	0
515	-	-	0
520	0	-	0

 $A_t = 33,800 \text{ ft}^2$ $T_m = 18.55^\circ\text{C}$ $T_{PR} = 17.3^\circ\text{C}$

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TABLE II-15
(CONTINUED)RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR
River Mile: 376.3

Date: 9-1-64
Time: 1300
Reactors Operating: B,C*,KW,D,DR
River Flow Rate: 110,000 cfs (est.)

Date: 9-1-64
Time: 1310
Reactors Operating: B,C*,KW,D,DR
River Flow Rate: 110,000 cfs (est.)

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KW Effluent Units
5	4	17.3	10
25	7	17.1	10
50	14	17.2	9
100	25	17.4	8
125	23.5	17.5	7
150	22.5	17.5	6
175	22.5	17.55	6
200	21.5	17.75	6
225	21	17.8	5
250	20	17.9	4
275	21	17.95	3
300	21	18.0	3
325	21	18.05	2
350	21	18.1	2
375	22.5	18.1	2
400	24.5	18.1	2
425	31	18.0	2
450	-	18.0	2
475	31	18.25	2
500	32.5	18.3	-
525	20	18.4	-
540	3	18.8	1
545	0	-	-

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KW Effluent Units
5	4	-	10
25	20	17.1	10
50	27	17.15	9
100	26	17.2	8
125	24.5	17.3	6
150	24.5	17.45	5
175	24.5	17.55	4
200	24.5	17.7	3
225	23.5	17.8	3
250	24.5	17.8	3
275	22.5	17.8	3
300	22.5	17.9	3
325	23.5	17.9	3
350	24.5	17.9	2
375	24.5	17.9	2
400	24.5	17.9	2
425	26	17.9	2
450	29	17.95	2
475	28	18.0	1
500	7	18.15	1
525	5	18.8	1
540	3	18.8	1
545	0	-	-

$$A_t = 33,900 \text{ ft}^2$$

$$T_m = 17.9^\circ\text{C}$$

$$T_{PR} = 16.3^\circ\text{C}$$

$$T_B = 86^\circ\text{C}$$

$$T_c = 70^\circ\text{C (est.)}$$

$$T_{KW} = 88^\circ\text{C}$$

$$T_{D,DR} = 88^\circ\text{C}$$

$$A_t = 33,000 \text{ ft}^2$$

$$T_m = 17.75^\circ\text{C}$$

TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR
River Mile: 376.3

Date: 9-4-64
Time: 1200
Reactors Operating: KW,D,DR,N
River Flow Rate: 85,000 cfs (est.)

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
10	5.5	18.95
15	12	18.9
40	36.5	18.85
65	42	18.8
90	29	18.75
115	22.5	18.65
140	20	18.55
165	18	18.45
190	19	18.35
215	20	18.2
240	19	18.05
265	19	17.9
290	20	17.75
315	20	17.55
340	21	17.45
365	21.5	17.35
390	22.5	17.25
425	27	17.25
450	21.5	17.2
470	4.5	17.25
475	0	"

$$A_t = 31,200 \text{ ft}^2$$

$$T_m = 17.7^\circ\text{C}$$

$$T_{PR} = 16.1^\circ\text{C}$$

$$T_{KW} = 88^\circ\text{C}$$

$$T_{D,DR} = 89^\circ\text{C}$$

$$T_N = 30^\circ\text{C (est.)}$$

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TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR

River Mile: 376.3

Date: 9-9-64
Time: 1145
Reactors Operating: B,C,KW,DR,N
River Flow Rate: 100,000 cfs (est.)

Date: 9-9-64
Time: 1155
Reactors Operating: B,C,KW,DR,N
River Flow Rate: 100,000 cfs (est.)

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
10	3.5	19.75
35	28	19.5
60	21	19.35
85	22.5	19.25
110	27	19.2
135	24.5	19.2
160	22.5	19.15
185	-	-
210	22	18.95
235	22	18.8
260	20	18.7
285	20	18.6
310	21	18.55
335	22.5	18.4
360	22.5	18.1
385	22.5	17.7
410	24.5	17.2
440	28	17.0
465	21	16.9
485	2	17.0
490	0	-

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
10	-	19.75
35	15	19.7
60	15	19.55
85	24.5	19.45
110	25.5	19.25
135	24.5	19.15
160	22.5	19.0
185	22	18.8
210	22.5	18.55
235	22	18.2
260	21	18.15
285	22	18.45
310	22.5	18.6
335	22.5	18.35
360	22.5	17.95
385	23.5	17.75
410	24.5	17.35
440	29	17.1
465	25.5	16.9
485	3.5	15.85
490	0	-

$$A_t = 32,400 \text{ ft}^2$$

$$T_m = 18.55^\circ\text{C}$$

$$T_{PR} = 16.1^\circ\text{C}$$

$$T_B = 84^\circ\text{C}$$

$$T_c = 87^\circ\text{C}$$

$$T_{KW} = 87^\circ\text{C}$$

$$T_{DR} = 87^\circ\text{C}$$

$$T_N = 35^\circ\text{C (est.)}$$

$$A_t = 30,200 \text{ ft}^2$$

$$T_m = 18.35^\circ\text{C}$$

$$T_{PR} = 16.1^\circ\text{C}$$

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TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR
River Mile: 376.3

Date: 9-9-64
Time: 1200
Reactors Operating: B,C,KW,DR,N
River Flow Rate: 100,000 cfs (est.)

Distance from Plant Shore-yds.	Depth feet	Temp. °C
10	4.5	19.65
35	24.5	19.4
60	15	19.3
85	25.5	19.25
110	27	19.15
135	24.5	19.1
160	22.5	19.0
185	21	18.9
210	22	18.7
235	22.5	18.55
260	20	18.3
285	21	18.1
310	22	18.0
335	22	17.85
360	22.5	17.6
385	23.5	17.3
410	24.5	17.15
440	29	16.95
465	19	16.9
485	3.5	16.95
490	0	-

$$A_t = 31,100 \text{ ft}^2$$

$$T_m = 18.3^\circ\text{C}$$

$$T_{PR} = 16.1^\circ\text{C}$$

Date: 9-9-64
Time: 1300
Reactors Operating: B,C,KW,DR,N
River Flow Rate: 110,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	2	19.05
10	4.5	18.95
35	15	18.9
60	26.5	18.7
85	24.5	18.5
110	28	18.3
135	23.5	18.3
160	22.5	18.25
185	20	18.15
210	20	18.05
235	21	17.95
260	20	17.8
285	20	17.8
310	21	17.8
335	21	17.65
360	22	17.55
385	22.5	17.5
410	24.5	17.1
440	29	17.0
465	18	16.95
485	3.5	17.0
490	0	-

$$A_t = 30,600 \text{ ft}^2$$

$$T_m = 17.9^\circ\text{C}$$

$$T_{PR} = 16.2^\circ\text{C}$$

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TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR
River Mile: 376.3

Date: 11-8-64

Time: 1140

Reactors Operating: B,C,KE,KW,D,DR,N

River Flow Rate: 40,000 cfs

Date: 11-8-64

Time: 1150

Reactors Operating: B,C,KE,KW,D,DR,N

River Flow Rate: 40,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	C Effluent Units
5	3.5	-	5
30	13	-	5
55	18	15.6	5
80	22.5	15.55	5
105	22.5	15.3	5
130	21	15.2	5
155	19	15.2	5
180	18	15.2	5
205	18	15.3	5
230	18	15.3	5
255	17	15.3	5
280	18	15.35	5
305	18	15.35	5
330	19	15.3	5
355	19	15.3	5
380	19	15.3	5
405	20	15.2	5
430	21	15.2	5
455	23.5	15.25	5
480	17	15.25	4
500	6.5	15.0	0
505	0	-	0

Distance from Plant Shore-yds.	Depth feet	Temp. °C	C Effluent Units
5	-	15.4	6
30	27	15.1	6
55	22	15.1	6
80	18	15.1	6
105	19	15.3	6
130	20	15.2	6
155	24.5	15.1	6
180	22.5	15.1	6
205	23.5	15.05	6
230	24.5	15.0	6
255	24.5	15.0	6
280	24.5	15.0	6
305	24.5	15.0	6
330	24.5	15.25	6
355	20	15.25	6
380	21	15.0	6
405	21	15.0	6
430	22.5	14.95	6
455	24.5	14.9	6
480	-	-	6
500	4.5	-	6
505	0	-	-

$$A_t = 27,300 \text{ ft}^2$$

$$T_m = 15.3^\circ\text{C}$$

$$T_{PR} = 12.0^\circ\text{C}$$

$$T_B = 84^\circ\text{C}$$

$$T_c = 88^\circ\text{C}$$

$$T_K = 86^\circ\text{C}$$

$$T_{D,DR} = 88^\circ\text{C}$$

$$T_N = 45^\circ\text{C (est.)}$$

$$A_t = 30,400 \text{ ft}^2$$

$$T_m = 15.05^\circ\text{C}$$

$$T_{PR} = 12.0^\circ\text{C}$$

TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR
River Mile: 376.3

Date: 11-28-64
Time: 1120
Reactors Operating: B,C,KE,KW,D,DR,N
River Flow Rate: 41,000 cfs

Date: 2-28-65
Time: 1005
Reactors Operating: C,KE,KW,D,N
River Flow Rate: 100,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KW Effluent Units
5	3.5	12.2	25
30	10.5	-	25
55	14	12.4	25
80	22	12.4	25
105	22	12.45	25
130	21	12.5	25
155	19	12.6	25
180	18	12.65	25
205	19	12.5	24
230	19	12.4	24
255	18	12.3	23
280	20	12.2	23
305	20	12.15	23
330	21	11.85	22
355	22	11.7	22
380	22.5	11.6	22
405	22.5	11.5	22
430	23.5	11.45	22
450	24.5	11.2	22
475	20	11.3	22
495	3.5	11.2	22
500	0	-	-

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	4.5	5.0
30	7.5	5.65
55	14	5.6
80	23.5	5.55
105	26.5	5.55
130	25.5	5.5
155	23.5	5.45
180	21	5.25
205	22	5.15
230	22	5.15
255	22.5	5.15
280	20	5.15
305	21	5.05
330	22	4.95
355	22	4.85
380	22	4.85
405	22.5	4.85
430	25.5	4.8
465	29	4.75
490	19	4.7
510	4.5	4.6
515	0	-

$$A_t = 28,100 \text{ ft}^2$$

$$T_m = 12.05^\circ\text{C}$$

$$T_{PR} = 9.4^\circ\text{C}$$

$$T_B = 83^\circ\text{C}$$

$$T_c = 86^\circ\text{C}$$

$$T_K = 85^\circ\text{C}$$

$$T_{D,DR} = 86^\circ\text{C}$$

$$T_N = 25^\circ\text{C (est.)}$$

$$A_t = 31,800 \text{ ft}^2$$

$$T_m = 5.1^\circ\text{C}$$

$$T_{PR} = 3.2^\circ\text{C}$$

$$T_c = 86^\circ\text{C}$$

$$T_{KE} = 82^\circ\text{C}$$

$$T_D = 76^\circ\text{C}$$

$$T_N = 50^\circ\text{C}$$

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TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR
River Mile: 376.3

Date: 2-28-65
Time: 1040
Reactors Operating: C,KE,KW,D,N
River Flow Rate: 100,000 cfs

Date: 3-6-65
Time: 0920
Reactors Operating: B,C,KE,KW,D
River Flow Rate: 85,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	4.5	5.4
35	14	5.4
60	18	5.4
85	25.5	5.35
110	26.5	5.35
135	25.5	5.3
160	23.5	-
185	20	-
210	23.5	5.1
235	22.5	5.1
260	21	5.0
285	22	4.95
310	24.5	-
335	27	4.8
360	25.5	-
385	23.5	4.7
410	24.5	4.55
435	25.5	4.4
470	29	4.25
495	24.5	4.25
515	4.5	4.2
520	0	-

Distance from Plant Shore-yds.	Depth feet	Temp. °C
5	3.5	5.8
20	7.5	5.8
45	14	5.9
70	22	5.85
95	24.5	5.7
120	27	5.6
145	23.5	5.55
170	22	5.55
195	21	5.5
220	22	5.5
245	21	5.5
270	21	5.45
295	20	5.4
320	21	5.35
345	22	5.25
370	-	5.2
395	22.5	5.15
420	22.5	5.1
445	23.5	-
480	25.5	-
505	16	-
525	4.5	-
530	0	-

$$A_t = 34,400 \text{ ft}^2$$

$$T_m = 4.95^\circ\text{C}$$

$$T_{PR} = 3.2^\circ\text{C}$$

$$A_t = 25,800 \text{ ft}^2$$

$$T_m = 5.5^\circ\text{C (est.)}$$

$$T_{PR} = 3.6^\circ\text{C}$$

$$T_B = 73^\circ\text{C}$$

$$T_c = 77^\circ\text{C}$$

$$T_K = 69^\circ\text{C}$$

$$T_D = 80^\circ\text{C}$$

TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR
River Mile: 376.3

Date: 4-11-65

Time: 1040

Reactors Operating: B,C,KW,D,N

River Flow Rate: 55,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>	<u>D Effluent Units</u>
5	3.5	8.55	17
10	12	8.45	17
35	29	8.45	17
60	23.5	8.45	17
85	22.5	8.5	17
110	24.5	8.5	19
135	20	8.45	22
160	17	8.35	23
185	16	8.3	24
210	16	8.25	23
235	17	8.25	20
260	15	8.25	20
285	-	8.15	19
310	17	8.1	17
335	17	7.9	16
360	-	7.75	13
385	18	7.6	9
410	20	7.6	9
440	23.5	7.7	12
465	20	7.65	11
485	3.5	7.4	5
490	0	-	-

$$A_t = 27,100 \text{ ft}^2$$

$$T_m = 8.15^\circ\text{C}$$

$$T_{PR} = 6.0^\circ\text{C}$$

$$T_B = 86^\circ\text{C}$$

$$T_c = 88^\circ\text{C}$$

$$T_{KW} = 80^\circ\text{C}$$

$$T_D = 86^\circ\text{C}$$

$$T_N = 35^\circ\text{C}$$

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TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR

River Mile: 376.3

Date: 2-13-66
Time: 0915
Reactors Operating: C,KE,N
River Flow Rate: 42,000 cfs

Date: 2-13-66
Time: 1140
Reactors Operating: C,KE,N
River Flow Rate: 48,000 cfs

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
15	2	7.05
25	16	7.05
50	35.5	7.05
75	33.5	7.05
100	34.5	7.1
125	21	7.15
150	18	7.15
175	16	7.1
200	15	7.05
225	15	6.85
250	-	6.85
275	-	6.8
300	15	6.75
325	16	6.7
350	17	6.6
375	18	6.3
400	19	6.0
425	19	5.7
455	21	-
480	23	5.6
500	3	6.1
505	0	-

<u>Distance from Plant Shore-yds.</u>	<u>Depth feet</u>	<u>Temp. °C</u>
5	2	7.3
15	21	7.25
40	31	7.2
65	34	7.2
90	29	7.2
115	20	7.15
140	17	6.95
165	16	6.9
190	14.5	6.9
215	13	6.9
240	14	6.95
265	15	6.95
290	15	6.4
315	15	6.7
340	15	6.55
365	17	6.3
390	17	6.0
415	19	5.7
445	24	5.65
470	21	5.55
490	3	5.55
495	0	-

$$A_t = 28,600 \text{ ft}^2$$

$$T_m = 6.7^\circ\text{C}$$

$$T_{PR} = 4.6^\circ\text{C}$$

$$T_c = 77^\circ\text{C}$$

$$T_{KE} = 79^\circ\text{C}$$

$$T_N = 53^\circ\text{C}$$

$$A_t = 27,400 \text{ ft}^2$$

$$T_m = 6.7^\circ\text{C}$$

$$T_{PR} = 4.4^\circ\text{C}$$

TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR
River Mile: 376.3

Date: 2-20-66
Time: 0950
Reactors Operating: B,C,KE,D,N
River Flow Rate: 38,000 cfs

Date: 2-20-66
Time: 1000
Reactors Operating: B,C,KE,D,N
River Flow Rate: 38,000

<u>Distance</u> <u>from Plant</u> <u>Shore-yds.</u>	<u>Depth</u> <u>feet</u>	<u>Temp.</u> <u>°C</u>	<u>N</u> <u>Effluent</u> <u>Units</u>
5	3	7.45	25
15	13	7.4	25
65	29	7.55	27
115	19	7.7	29
165	15	7.55	27
215	16	7.55	26
265	15	7.55	28
315	17	7.45	26
365	16	7.15	24
415	18	6.95	17
445	22	6.3	14
470	18	6.15	12
490	3	6.0	12
495	0	-	-

<u>Distance</u> <u>from Plant</u> <u>Shore-yds.</u>	<u>Depth</u> <u>feet</u>	<u>Temp.</u> <u>°C</u>	<u>N</u> <u>Effluent</u> <u>Units</u>
5	3	7.55	28
15	16	7.6	28
65	29	7.65	28
115	23	7.6	30
165	16	7.55	28
215	15	7.65	30
265	16	7.55	29
315	16	7.45	29
365	18	6.85	26
415	18	6.4	17
445	16	6.0	13
470	9	5.9	12
490	3	6.0	12
495	0	-	-

$$A_t = 25,500 \text{ ft}^2$$

$$T_m = 7.3^\circ\text{C}$$

$$T_{PR} = 4.6^\circ\text{C}$$

$$T_{B,C} = 85^\circ\text{C}$$

$$T_{KE} = 81^\circ\text{C}$$

$$T_N = 53^\circ\text{C}$$

$$T_D = 89^\circ\text{C}$$

$$A_t = 25,600 \text{ ft}^2$$

$$T_m = 7.3^\circ\text{C}$$

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TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR
River Mile: 376.3

Date: 3-17-66

Time: 1105

Reactors Operating: B,C,KE,KW,D,N

River Flow Rate: 70,000 cfs

Date: 3-17-66

Time: 1120

Reactors Operating: B,C,KE,KW,D,N

River Flow Rate: 70,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C
10	2	9.0
35	26	8.85
85	28	8.7
135	24	8.35
185	19	7.8
235	18	7.75
285	18	7.9
335	20	8.05
385	21	6.85
435	22	6.4
465	26	5.75
490	12	5.65
510	3	5.65
515	0	-

Distance from Plant Shore-yds.	Depth feet	Temp. °C
10	2	9.0
35	15	9.05
85	25	8.9
135	24	8.8
185	17	8.9
235	18	8.45
285	18	7.85
335	19	6.95
385	21	6.4
435	24	6.55
465	26	6.55
490	15	6.4
510	3	5.65
515	0	-

$$A_t = 30,900 \text{ ft}^2$$

$$T_m = 7.7^\circ\text{C}$$

$$T_{PR} = 4.3^\circ\text{C}$$

$$T_{B,C} = 87^\circ\text{C}$$

$$T_K = 79^\circ\text{C}$$

$$T_N = 55^\circ\text{C}$$

$$T_D = 88^\circ\text{C}$$

$$A_t = 29,200 \text{ ft}^2$$

$$T_m = 7.8^\circ\text{C}$$

$$T_{PR} = 4.3^\circ\text{C}$$

TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR
River Mile: 376.3

Date: 3-17-66

Time: 1235

Reactors Operating: B,C,KE,KW,D,N

River Flow Rate: 73,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. C
5	2	8.95
35	21	8.85
85	27	8.65
135	25	8.35
185	20	8.15
235	19	7.5
285	18	7.35
335	20	7.15
385	21	6.95
435	22	6.3
465	25	5.9
490	13	5.65
510	3	5.6
515	0	-

$$A_t = 31,500 \text{ ft}^2$$

$$T_m = 7.6^\circ\text{C}$$

$$T_{PR} = 4.3^\circ\text{C}$$

Date: 3-31-66

Time: 1445

Reactors Operating: B,C,KE,KW,

River Flow Rate: 90,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. C
5	2	8.7
10		8.8
35		8.9
60		8.1
85		8.2
110	No	8.4
135	valid	8.3
160	data	8.3
185		8.2
210		8.0
235		7.9
260		8.1
285		7.9
310		8.4
360		8.1
410		7.1
445		6.5
470		6.5
490	3	6.5
495	0	-

$$A_t = \text{Unknown}$$

$$T_m = 7.9^\circ\text{C (est.)}$$

$$T_{PR} = 5.7^\circ\text{C}$$

$$T_B = 40^\circ\text{C (est.)}$$

$$T_c = 88^\circ\text{C}$$

$$T_K = 81^\circ\text{C}$$

$$T_N = 54^\circ\text{C}$$

$$T_D = 90^\circ\text{C}$$

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TABLE II-15
(CONTINUED)

RIVER TEMPERATURE TRAVERSES - ONE MILE BELOW DR
River Mile: 376.3

Date: 4-3-66

Time: 1430

Reactors Operating: B,C,KE,KW,D,N

River Flow Rate: 39,000 cfs

Distance from Plant Shore-yds.	Depth feet	Temp. °C	KE Effluent Units
10		11.5	26
35		11.5	26
60		11.5	26
85		11.6	27
110		11.5	27
135		11.5	27
160		11.55	26
185	No	11.5	26
210	valid	11.35	26
235	data	11.25	26
260		11.25	26
285		11.2	26
310		11.3	25
335		11.45	26
360		10.95	26
385		10.65	24
410		10.25	23
420		10.1	21
445		9.8	20
465		9.8	20
470	0	-	-

A_t = Unknown

T_m = 11.1°C (est.)

T_{PR} = 6.6°C

$T_{B,C}$ = 87°C

T_K = 83°C

T_N = 54°C

T_D = 89°C

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