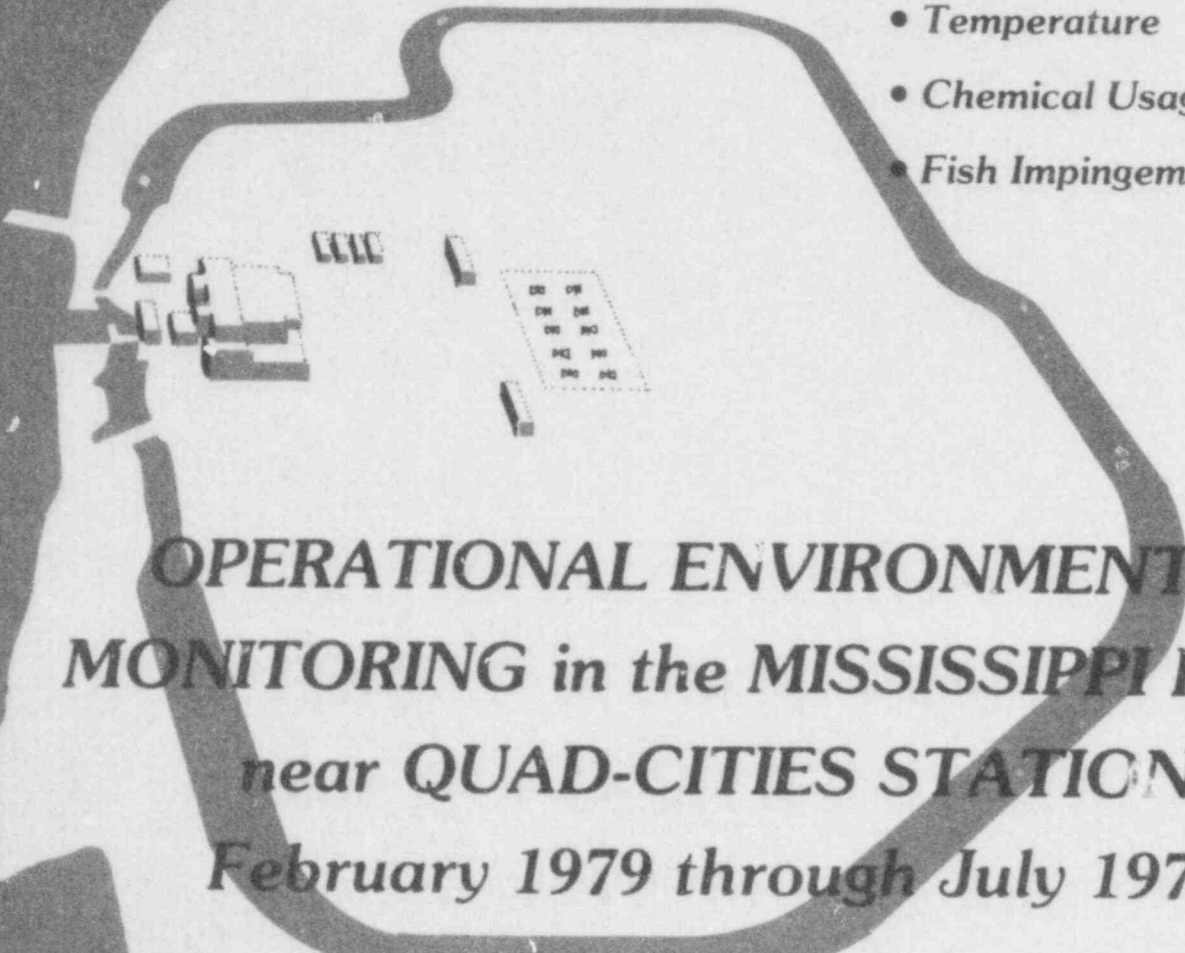


Semi-Annual NRC Report to  
**COMMONWEALTH EDISON COMPANY**  
**CHICAGO, ILLINOIS**

**POOR ORIGINAL**

- Chlorine
- Temperature
- Chemical Usage
- Fish Impingement



**OPERATIONAL ENVIRONMENTAL  
MONITORING in the MISSISSIPPI RIVER**  
near **QUAD-CITIES STATION**  
February 1979 through July 1979



**HAZLETON**

ENVIRONMENTAL SCIENCES CORPORATION

1500 FRONTAGE ROAD, NORTHBROOK, ILLINOIS 60062, U.S.A.

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# HAZLETON

ENVIRONMENTAL SCIENCES CORPORATION

1500 FRONTAGE ROAD, NORTHBROOK, ILLINOIS 60062, U.S.A.

SEMI-ANNUAL NRC REPORT TO  
COMMONWEALTH EDISON COMPANY  
CHICAGO, ILLINOIS

OPERATIONAL ENVIRONMENTAL MONITORING  
IN THE MISSISSIPPI RIVER NEAR  
QUAD-CITIES STATION

February 1979 through July 1979

PREPARED AND SUBMITTED  
BY  
HAZLETON ENVIRONMENTAL SCIENCES

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Vice President and Technical Director

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1 October 1979

# HAZLETON ENVIRONMENTAL SCIENCES

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# HAZLETON ENVIRONMENTAL SCIENCES

## PREFACE

The Quad-Cities Station is a nuclear fueled steam electric generating facility located near Cordova, Illinois, adjacent to Pool 14 of the Mississippi River about 21 miles north of the Davenport-Moline-Rock Island area.

This report is presented as required by the Nuclear Regulatory Commission Operating Licenses DRP-29 and DRP-30 non-radiological technical specifications for Quad-Cities Station Units 1 and 2. These specifications require the submission of semi-annual reports describing the results of environmental monitoring for the total chlorine used in condenser chlorination, temperature monitoring, station chemical usage, and fish impingement.

The monitoring results for the six-month period February 1979 through July 1979 are herein reported.

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Chapter 1

TOTAL CHLORINE MONITORING

Margaret A. George

OPERATIONAL ENVIRONMENTAL MONITORING

IN THE MISSISSIPPI RIVER NEAR QUAD-CITIES STATION

February 1979 through July 1979

HAZLETON ENVIRONMENTAL SCIENCES

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# HAZLETON ENVIRONMENTAL SCIENCES

## Chapter 1

### TOTAL CHLORINE MONITORING

by

Margaret A. George

#### I. Introduction

Total residual chlorine monitoring during Quad-Cities condenser chlorination began on 27 July 1972 and has continued through this study period, February through July 1979. During this period, the Station operated in the open cycle cooling mode using the diffuser pipes, in the closed cycle cooling mode using the spray canal, or a combination open and closed cycle mode of condenser cooling in which half the cooling water was discharged through the north and/or south diffuser pipes while the other half circulated within the closed cycle spray canal system (see Appendix D for details). On April 25, the chlorine injection time increased from twenty minutes per unit to forty minutes per unit.

The objectives of this study were:

1. to document total residual chlorine concentrations in the Mississippi River upstream and downstream from the Quad-Cities Station and at the point of discharge to the diffuser and/or blowdown pipes;
2. to monitor variations in chlorine concentrations during condenser chlorination in the station's discharge bay during the open or combination open and closed cycle mode of condenser cooling or in the spray canal during the closed cycle mode; and
3. to compare all chlorine concentrations determined during this study to the surveillance requirements approved in the technical specifications by the U.S. Nuclear Regulatory Commission (1974).

#### II. Field and Analytical Procedures

Total residual chlorine concentrations were determined during condenser chlorination four times per month in compliance with the non-radiological technical specifications for the Quad-Cities Station (USNRC 1974). Measurements were made in the Mississippi River before, during, and after condenser chlorination and also in either the discharge bay or spray canal of the station at frequent time intervals during chlorination. Sampling locations are described in Tables 1.1. and 1.2.

Concentrations of total residual chlorine were determined in the discharge bay (Location 7) during the combination cycle cooling mode and in the spray canal (Location 9) during the closed cycle cooling mode. In both the discharge bay and spray canal, chlorine concentrations were determined at about two to five minute intervals starting at the time of condenser chlorination and ending approximately twenty minutes after termination or when chlorine levels were below the analytical limit of 0.01 mg/l.



## HAZLETON ENVIRONMENTAL SCIENCES

Table 1.1. Description of sampling locations monitored, February through July 1978.

Sampling Location	Description
6	At the intake forebay of the station.
7	At the entrance to the diffuser pipe in the discharge canal of the station.
9	At the entrance to the blowdown pipe in the spray canal.
21	Downstream from the diffuser pipes.
22	Downstream from the blowdown pipe.
23	Upstream from the diffuser pipe.
24	At the point of discharge from the diffuser pipe.
26	Upstream from the blowdown pipe.
30	South edge of intake.

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Table 1.2. Sampling locations monitored for total residual chlorine during condenser chlorination, February through July 1979.

Station Operationg Condition	Sampling Frequency	Sampling Locations	Replicates	Depth
Open and Combination Cycle	4 times per month	Discharge bay (7)	Single	Tap
		Upstream discharge pipe (23)	Single	One meter
		Discharge pipe (24)	Single	One meter
		Downstream discharge pipe (21)	Single	One meter
		Intake forebay (6)	Single	One meter
Closed cycle	4 times per month	Spray canal (9)	Single	Tap
		Upstream blowdown pipe (26)	Single	One meter
		Downstream blowdown pipe (22)	Single	One meter
		Intake forebay (6)	Single	One meter
		South end of Intake (30)	Single	One meter

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Samples in the river were collected at a depth of one meter using a Kemmerer sampler unless cold weather rendered the water sampler inoperable. At those times bottles were filled directly, as they were at the station locations. Samples were analyzed immediately after collection by method 409C (A.P.H.A. et al. 1976). A Fischer and Porter Amperometric Titrator having an analytical detection limit of 0.01 mg/l was used for analysis of all samples.

### III. Results and Discussion

Throughout this study period, all chlorine concentrations were within the U.S. Nuclear Regulatory Commission 1974 surveillance requirements, as summarized in Table 1.3.

Station operation data during the chlorination cycles monitored from February through July 1979 are shown in Table 1.4.

Total residual chlorine data from February through July 1978 are presented in Tables 1.5 through 1.10.

### IV. Summary and Conclusions

1. Chlorine monitoring was conducted 24 times during operation of the Quad-Cities condenser chlorination system from February through July 1979. Total residual chlorine was not detected in the Mississippi River upstream or downstream from the station, indicating dissipation of chlorine before reaching the river and compliance with the Commonwealth Edison Company - U.S. Environmental Protection Agency (1976) recommended limit of 0.20 mg/l.

2. Total chlorine concentrations in the discharge bay and spray canal during the entire reporting period were within the limits approved by the U.S. Nuclear Regulatory Commission.

### V. References Cited

- A.P.H.A., A.W.W.A., and W.P.C.F. 1976. Standard methods for the examination of water and wastewater. 14th Ed. Amer. Public Health Assn., Washington, D.C. 1193 pp.
- Commonwealth Edison Company. 1976. Chlorine reduction study for Quad-Cities Station. Proposed literature by the U.S.E.P.A. and Commonwealth Edison Company letter dated 29 January 1976.
- U.S. Nuclear Regulatory Commission. 1974. Appendix B to operating license DPR-29 and DPR-30: non-radiological technical and specifications and basis for Quad-Cities Station Units 1 and 2 Rock Island, Illinois. Commonwealth Edison Company. Docket numbers 50-254 and 50-265. Washington, D.C. 15 pp.

## HAZLETON ENVIRONMENTAL SCIENCES

Table 1.3. Average detectable chlorine concentrations, Quad-Cities Station, February through July 1979.

Sampling Date	No. Circulating Water Pumps Operating	USNRC Allowable Limit <sup>a</sup> (mg/l)	Observed Average Detectable Concentration <sup>b</sup> (mg/l)	Location Monitored on Sampling Date
1 February 1979	5	0.60	c	Spray Canal
21 February 1979	6	0.50	c	Spray Canal
23 February 1979	5	0.60	c	Spray Canal
28 February 1979	3	1.00	c	Discharge Bay
7 March 1979	6	0.50	c	Discharge Bay
14 March 1979	6	0.50	c	Spray Canal
27 March 1979	6	0.50	c	Discharge Bay
29 March 1979	6	0.50	c	Discharge Bay
12 April 1979	6	0.50	c	Discharge Bay
20 April 1979	6	0.50	0.06	Discharge Bay
24 April 1979	6	0.50	0.14	Discharge Bay
27 April 1979	6	0.50	0.13	Discharge Bay
4 May 1979	6	0.50	0.17	Discharge Bay
11 May 1979	6	0.50	0.27	Discharge Bay
17 May 1979	6	0.50	0.20	Discharge Bay
24 May 1979	6	0.50	0.17	Discharge Bay
15 June 1979	6	0.50	c	Discharge Bay
20 June 1979	6	0.50	0.10	Discharge Bay
22 June 1979	6	0.50	0.05	Discharge Bay
27 June 1979 <sup>d</sup>	6	0.50	0.10	Discharge Bay
13 July 1979	6	0.50	0.11	Discharge Bay
18 July 1979	6	0.50	0.18	Discharge Bay
23 July 1979	6	0.50	0.17	Discharge Bay
27 July 1979	6	0.50	0.25	Discharge Bay

<sup>a</sup>Maximum total chlorine concentration (mg/l) allowable in the discharge bay or spray canal as averaged over the injection cycle according to the U.S. Nuclear Regulatory Commission (1974).

<sup>b</sup>The maximum detectable total chlorine concentration determined as averaged over the injection cycle for the number of circulating pumps operating is defined according to Commonwealth Edison (1976) as the arithmetic mean of detectable chlorine concentrations (0.01 mg/l or higher) during any particular monitoring period during a sodium hypochlorite injection cycle.

<sup>c</sup>No chlorine detected.

<sup>d</sup>Observed average detectable concentration may be in error. After sampling had been completed, Hazleton personnel were informed by station personnel that the injection cycle had begun at 1020, not 1030 as previously told.

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Table 1.4. Sampling dates for total residual chlorine monitoring during condenser chlorination and Quad-Cities Station operating conditions, February through July 1979.

Date	Station Operation	Number of Circulating Water Pumps Operating	Number of Lift Pumps Operating	Injection Period of Station Condenser Chlorination (hour)	Locations Monitored at Station	Mississippi River Locations Monitored	Number of Total Chlorine Determinations Performed
1 Feb 1979	closed cycle	5	3	1030 to 1115	spray canal (9)	upstream (6,26,30) downstream (22)	30
21 Feb 1979	closed cycle	6	3	1030 to 1110	spray canal (9)	upstream (6,26,30) downstream (22)	24
23 Feb 1979	closed cycle	5	3	1030 to 1110	spray canal (9)	upstream (6,26,30) downstream (22)	34
28 Feb 1979	combination cycle	3	2	1030 to 1110	discharge bay (7)	upstream (6,23) downstream (21,24)	34
3 Mar 1979	combination cycle	6	4	1030 to 1110	discharge bay (7)	upstream (6,23) downstream (21,24)	30
14 Mar 1979	closed cycle	6	5	1030 to 1110	spray canal (9)	upstream (6,23,30) downstream (22)	32
27 Mar 1979	combination cycle	6	3	1030 to 1115	discharge bay (7)	upstream (6,23) downstream (21,24)	32
29 Mar 1979	combination cycle	6	3	1030 to 1115	discharge bay (7)	upstream (6,23) downstream (21,24)	34
12 April 1979	combination cycle	6	5	1030 to 1110	discharge bay (7)	upstream (6,23) downstream (21,24)	34
20 April 1979	combination cycle	6	3	1030 to 1110	discharge bay (7)	upstream (6,23) downstream (21,24)	36
24 April 1979	combination cycle	6	3	1030 to 1110	discharge bay (7)	upstream (6,23) downstream (21,24)	47
27 April 1979	combination cycle	6	3	1030 to 1110	discharge bay (7)	upstream (6,23) downstream (21,24)	40
4 May 1979	combination cycle	6	3	1030 to 1110	discharge bay (7)	upstream (6,23) downstream (21,24)	36
11 May 1979	combination cycle	6	3	0920 to 1045	discharge bay (7)	upstream (6,23) downstream (21,24)	35
17 May 1979	combination cycle	6	3	1030 to 1155	discharge bay (7)	upstream (6,23) downstream (21,24)	48
24 May 1979	combination cycle	6	3	1030 to 1155	discharge bay (7)	upstream (6,23) downstream (21,24)	52
15 June 1979	combination cycle	6	3	1030 to 1145	discharge bay (7)	upstream (6,23) downstream (21,24)	26
20 June 1979	combination cycle	6	3	1030 to 1200	discharge bay (7)	upstream (6,23) downstream (21,24)	40
22 June 1979	combination cycle	6	3	1030 to 1200	discharge bay (7)	upstream (6,23) downstream (21,24)	31
27 June 1979	combination cycle	6	3	1020 to 1155	discharge bay (7)	upstream (6,23) downstream (21,24)	32
13 July 1979	combination cycle	6	3	1030 to 1155	discharge bay (7)	upstream (6,23) downstream (21,24)	45
18 July 1979	combination cycle	6	3	1030 to 1155	discharge bay (7)	upstream (6,23) downstream (21,24)	48
23 July 1979	combination cycle	6	3	1030 to 1200	discharge bay (7)	upstream (6,23) downstream (21,24)	49
27 July 1979	combination cycle	6	3	1020 to 1145	discharge bay (7)	upstream (6,23) downstream (21,24)	52

## HAZLETON ENVIRONMENTAL SCIENCES

Table 1.5. Total residual chlorine concentrations measured during condenser chlorination, February 1979.

Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream		Downstream of		Upstream of Blowdown		Downstream of Blowdown		Spray Canal	
	Near Intake (Location 6) (hour)	(mg/l)	Intake (Location 30) (hour)	(mg/l)	Pipe (Location 26) (hour)	(mg/l)	Pipe (Location 22) (hour)	(mg/l)	Location 9 (hour)	(mg/l)
1 February 1979 Closed Cycle 1030 to 1115	1030	<0.01	1035	<0.01	1040	<0.01			1038	<0.01
									1041	<0.01
									1044	<0.01
	1050	<0.01		1055	<0.01				1047	<0.01
									1050	<0.01
									1053	<0.01
									1056	<0.01
									1059	<0.01
									1100	<0.01
	1110	<0.01		1115	<0.01				1105	<0.01
									1106	<0.01
									1111	<0.01
21 February 1979 Closed Cycle 1030 to 1110	1030	<0.01	1030	<0.01	1030	<0.01	1030	<0.01	1020	<0.01
									1025	<0.01
									1045	<0.01
	1102	<0.01	1103	<0.01	1105	<0.01			1050	<0.01
									1055	<0.01
									1100	<0.01
	1115	<0.01	1116	<0.01	1117	<0.01	1118	<0.01	1105	<0.01
									1106	<0.01
									1110	<0.01
									1115	<0.01
									1120	<0.01
									1125	<0.01
1130	<0.01									
22 February 1979 Closed Cycle 1030 to 1110	1028	<0.01	1029	<0.01	1030	<0.01			1025	<0.01
									1030	<0.01
									1033	<0.01
	1059	<0.01	1100	<0.01	1101	<0.01	1102	<0.01	1036	<0.01
									1039	<0.01
									1042	<0.01
									1045	<0.01
									1048	<0.01
									1051	<0.01
	1054	<0.01								
	1115	<0.01	1116	<0.01	1117	<0.01	1118	<0.01	1057	<0.01
									1100	<0.01
1103									<0.01	
1106									<0.01	
1109									<0.01	
1112									<0.01	
1115	<0.01									
1118	<0.01									
1121	<0.01									
1124	<0.01									
1127	<0.01									
1130	<0.01									

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Table 1.5. (continued)

Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream		Upstream of Diffuser		Diffuser Pipe		Downstream of Diffuser		Discharge Canal	
	Near Intake (Location 6)		Pipe (Location 23)		Pipe (Location 24)		Pipe (Location 21)		Location 7	
	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)
28 February 1979 Combination Cycle 1030 to 1110	1030	<0.01	1031	<0.01	1033	<0.01	1035	<0.01	1025	<0.01
									1030	<0.01
									1033	<0.01
									1036	<0.01
									1039	<0.01
									1042	<0.01
									1045	<0.01
									1048	<0.01
									1051	<0.01
									1054	<0.01
									1057	<0.01
	1058	<0.01	1059	<0.01					1100	<0.01
					1101	<0.01	1103	<0.01	1103	<0.01
									1106	<0.01
									1109	<0.01
									1112	<0.01
	1113	<0.01	1114	<0.01					1115	<0.01
					1117	<0.01	1118	<0.01	1118	<0.01
									1121	<0.01
									1124	<0.01
								1127	<0.01	
								1130	<0.01	

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Table 1.6. Total residual chlorine concentrations measured during condenser chlorination, March 1979.

Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream Near Intake (Location 6)		Upstream of Diffuser Pipe (Location 23)		Diffuser Pipe (Location 24)		Downstream of Diffuser Pipe (Location 21)		Discharge Canal Location 7	
	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)
7 March 1979 Combination Cycle 1030 to 1110	1027	<0.01	1028	<0.01	1030	<0.01	1031	<0.01	1025	<0.01
									1030	<0.01
									1033	<0.01
									1036	<0.01
									1039	<0.01
									1042	<0.01
									1045	<0.01
									1048	<0.01
									1051	<0.01
									1054	<0.01
									1057	<0.01
									1100	<0.01
									1103	<0.01
									1106	<0.01
									1109	<0.01
								1112	<0.01	
								1115	<0.01	
								1118	<0.01	
								1121	<0.01	
								1124	<0.01	
								1127	<0.01	
								1130	<0.01	

Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream Near Intake (Location 6)		Downstream of Intake (Location 30)		Upstream of Blowdown Pipe (Location 26)		Downstream of Blowdown Pipe (Location 22)		Spray Canal Location 9	
	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)
14 March 1979 Closed Cycle 1030 to 1110	1020	<0.01	1020	<0.01	1022	<0.01	1022	<0.01	1030	<0.01
									1033	<0.01
									1036	<0.01
									1039	<0.01
									1042	<0.01
									1045	<0.01
									1048	<0.01
									1051	<0.01
									1054	<0.01
									1057	<0.01
									1100	<0.01
									1103	<0.01
									1106	<0.01
									1109	<0.01
									1112	<0.01
								1115	<0.01	
								1118	<0.01	
								1120	<0.01	
								1125	<0.01	
								1130	<0.01	

Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream Near Intake (Location 6)		Upstream of Diffuser Pipe (Location 23)		Diffuser Pipe (Location 24)		Downstream of Diffuser Pipe (Location 21)		Discharge Canal Location 7	
	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)
27 March 1979 Combination Cycle 1030 to 1115	1030	<0.01							1030	<0.01
									1033	<0.01
									1036	<0.01
									1039	<0.01
									1042	<0.01
									1045	<0.01
									1048	<0.01
									1051	<0.01
									1054	<0.01
									1057	<0.01
									1100	<0.01
									1103	<0.01
									1106	<0.01
									1109	<0.01
									1112	<0.01
								1115	<0.01	
								1118	<0.01	
								1120	<0.01	
								1125	<0.01	
								1130	<0.01	



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Table 1.6. (continued)

Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream Near Intake (Location 6) (hour) (ng/l)	Upstream of Diffuser Pipe (Location 20) (hour) (ng/l)	Diffuser Pipe (Location 24) (hour) (ng/l)	Downstream of Diffuser Pipe (Location 21) (hour) (ng/l)	Discharge Canal Location 7 (hour) (ng/l)	
29 March 1979 Combination Cycle 1030 to 1110	1025	<0.01	1026	<0.01	1027	<0.01
			1027	<0.01	1027	<0.01
			1030	<0.01	1033	<0.01
			1036	<0.01	1039	<0.01
			1042	<0.01	1045	<0.01
			1048	<0.01	1051	<0.01
			1054	<0.01	1057	<0.01
	1055	<0.01	1056	<0.01	1057	<0.01
			1057	<0.01	1057	<0.01
			1100	<0.01	1103	<0.01
			1106	<0.01	1109	<0.01
			1110	<0.01	1112	<0.01
			1115	<0.01	1118	<0.01
			1121	<0.01	1124	<0.01
1110	<0.01	1111	<0.01	1112	<0.01	
		1112	<0.01	1112	<0.01	
					1127	<0.01
					1130	<0.01

<sup>a</sup> Samples not collected due to airboat problems

<sup>b</sup> Station personnel indicated that there were problems with the injection pumps and there would probably not be any chlorine in the samples

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Total 1.7. Total residual chlorine concentrations measured during condenser chlorination, April 1979.

Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream Near Intake (Location 6)		Upstream of Diffuser Pipe (Location 23)		Diffuser Pipe (Location 24)		Downstream of Diffuser Pipe (Location 21)		Discharge Canal Location 7	
	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)
12 April 1979 Combination Cycle 1030 to 1110	1028	<0.01	1030	<0.01	1032	<0.01	1034	<0.01	1027	<0.01
									1030	<0.01
									1033	<0.01
	1055	<0.01	1057	<0.01	1059	<0.01	1101	<0.01	1036	<0.01
									1039	<0.01
									1042	<0.01
									1045	<0.01
									1048	<0.01
									1051	<0.01
	1115	<0.01	1117	<0.01	1119	<0.01	1121	<0.01	1054	<0.01
									1057	<0.01
									1100	<0.01
									1103	<0.01
									1106	<0.01
									1109	<0.01
20 April 1979 Combination Cycle 1030 to 1110	1030	<0.01	1032	<0.01	1033	1034	<0.01	1112	<0.01	
								1115	<0.01	
								1118	<0.01	
	1055	<0.01	1057	<0.01	1059	<0.01	1100	<0.01	1121	<0.01
									1124	<0.01
									1127	<0.01
									1130	<0.01
									1133	<0.01
									1136	<0.01
	1113	<0.01	1115	<0.01	1117	<0.01	1118	<0.01	1124	<0.01
									1127	<0.01
									1130	<0.01
									1133	<0.01
									1136	<0.01
									1139	<0.01

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Table 1.7. (continued)

Sample Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream		Upstream of Diffuser		Diffuser Pipe		Downstream of Diffuser		Discharge Canal	
	Near Intake (Location 6)		Pipe (Location 23)		(Location 24)		Pipe (Location 21)		Location 7	
	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)
24 April 1979 Combination Cycle 1030 to 1110	1025	<0.01	1026	<0.01	1026	<0.01	1027	<0.01	1025	<0.01
									1030	<0.01
									1033	<0.01
									1036	<0.01
									1039	<0.01
									1042	<0.01
									1045	<0.01
									1048	<0.01
									1051	<0.01
									1054	<0.01
	1050	<0.01	1051	<0.01	1051	<0.01	1052	<0.01	1057	<0.01
									1100	0.02
									1103	0.05
									1106	0.10
									1108	0.11
									1109	0.11
									1110	0.12
									1112	0.13
									1114	0.15
									1117	0.17
	1110	<0.01	1111	<0.01	1111	<0.01	1112	<0.01	1117	0.17
									1118	0.19
									1120	0.16
									1121	0.15
									1123	0.16
									1124	0.25
									1126	0.16
									1127	0.19
									1130	0.17
									1133	0.20
27 April 1979 Combination Cycle 1030 to 1110	1030	<0.01	1032	<0.01	1033	<0.01	1034	<0.01	1030	<0.01
									1033	<0.01
									1036	<0.01
									1039	<0.01
									1042	<0.01
									1045	<0.01
									1048	<0.01
									1051	<0.01
									1054	<0.01
									1057	<0.01
1058	<0.01	1100	<0.01	1101	<0.01	1102	<0.01	1100	0.02	
								1103	0.06	
								1106	0.06	
								1108	0.10	
								1110	0.13	
								1112	0.15	
								1115	0.17	
								1117	0.19	
								1119	0.20	
								1121	0.15	
1115	<0.01	1117	<0.01	1118	<0.01	1119	<0.01	1123	0.19	
								1126	0.20	
								1128	0.21	
								1130	0.19	
								1133	0.15	
								1136	0.06	
								1139	0.02	
								1142	<0.01	

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Table 1.8. Total residual chlorine concentrations measured during condenser chlorination, May 1979.

Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream		Upstream of Diffuser		Diffuser		Downstream of Diffuser		Discharge Canal										
	Near Intake (Location 6) (hour)	(mg/l)	Pipe (Location 23) (hour)	(mg/l)	(Location 20) (hour)	(mg/l)	Pipe (Location 21) (hour)	(mg/l)	Location 7 (hour)	(mg/l)									
4 May 1979 Combination Cycle 1030 to 1110	1030	<0.01	1032	<0.01	1033	<0.01	1034	<0.01	1030	<0.01									
									1033	<0.01									
									1036	<0.01									
	1100	<0.01	1102	<0.01	1103	<0.01	1104	<0.01	1039	<0.01									
									1042	<0.01									
									1045	0.02									
									1048	0.08									
									1051	0.13									
									1054	0.16									
									1057	0.21									
									1100	0.22									
									1102	0.26									
									1106	0.11									
									1108	0.20									
									1110	0.21									
1115	<0.01	1117	<0.01	1118	<0.01	1119	<0.01	1112	0.22										
								1115	0.25										
								1117	0.23										
								1120	0.25										
								1123	0.27										
								1126	0.17										
								1129	0.09										
								1132	0.02										
								1135	<0.01										
								11 May 1979 Combination Cycle 0920 to 1045	0910	<0.01	0910	<0.01	0910	<0.01	0910	<0.01	0920	<0.01	
																	0924	<0.01	
																	0927	<0.01	
									0940	<0.01	0940	<0.01	0940	<0.01	0940	<0.01	0930	<0.01	
																	0933	<0.01	
																	0936	<0.01	
0939	<0.01																		
0942	0.05																		
0945	0.22																		
0947	0.24																		
0950	0.31																		
0952	0.33																		
0955	0.36																		
0958	0.36																		
1000	0.30																		
1000	<0.01	1000	<0.01	1000	<0.01	1000	<0.01		1006	0.39									
									1009	0.39									
									1012	0.35									
									1016	0.33									
									1021	0.18									
									1024	0.08									
									1027	0.02									
									1030	<0.01									
									17 May 1979 Combination Cycle 1030 to 1155	1025	<0.01	1027	<0.01	1029	<0.01	1031	<0.01	1027	<0.01
																		1030	<0.01
																		1033	<0.01
										1107	<0.01	1104	<0.01	1102	<0.01	1100	<0.01	1036	<0.01
1039	<0.01																		
1042	<0.01																		
1045	<0.01																		
1048	0.06																		
1051	0.11																		
1054	0.16																		
1057	0.19																		
1100	0.23																		
1103	0.21																		
1106	0.20																		
1109	0.18																		
1112	0.25																		
1115	0.25																		
1116	<0.01	1118	<0.01	1120	<0.01	1122	<0.01	1118		0.22									
								1121		0.20									
								1124		0.20									
								1127		0.19									
								1130		0.19									
								1133		0.24									
								1136		0.27									
								1139		0.27									
								1142		0.31									

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Table 1.8. (continued)

Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream Near Intake (Location 6) (hour)	(mg/l)	Upstream of Diffuser Pipe (Location 23) (hour)	(mg/l)	Diffuser Pipe (Location 24) (hour)	(mg/l)	Downstream of Diffuser Pipe (Location 21) (hour)	(mg/l)	Discharge Canal Location 7 (hour)	(mg/l)	
17 May 1979 Combination Cycle 1030 to 1155 (continued)									1145	0.19	
									1148	0.20	
									1151	0.23	
									1154	0.24	
									1157	0.28	
									1200	0.23	
									1203	0.15	
									1206	0.05	
									1209	<0.01	
									1212	<0.01	
24 May 1979 Combination Cycle 1030 to 1155	1025	<0.01	1028	<0.01	1030	<0.01			1030	<0.01	
							1032	<0.01	1033	<0.01	
									1036	<0.01	
									1039	<0.01	
									1042	<0.01	
									1045	<0.01	
									1048	<0.01	
									1051	<0.01	
									1054	<0.01	
									1057	<0.01	
						1102	<0.01	1100	<0.01	1100	<0.01
				1103	<0.01					1103	<0.01
		1106	<0.01							1106	<0.01
										1109	0.05
										1112	0.09
										1115	0.12
										1118	0.18
										1121	0.19
										1124	0.19
										1127	0.17
										1130	0.18
										1133	0.22
										1136	0.23
										1139	0.23
										1142	0.18
										1145	0.15
										1148	0.13
										1151	0.18
										1154	0.20
								1155	<0.01	1157	0.19
									1200	0.21	
									1203	0.20	
	1202	<0.01			1158	<0.01			1206	0.22	
			1200	<0.01					1209	0.20	
									1212	0.20	
									1215	0.22	
									1218	0.15	
									1221	0.10	
									1224	0.02	
									1227	<0.01	

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Table 1.9. Total residual chlorine concentrations measured during condenser chlorination, June 1979.

Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream Near Intake (Location 6)		Upstream of Diffuser Pipe (Location 23)		Diffuser Pipe (Location 24)		Downstream of Diffuser Pipe (Location 21)		Discharge Canal Location 7	
	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)
15 June 1979 Combination Cycle 1030 to 1145	1030	<0.01	1031	<0.01	1031	<0.01	1035	<0.01	1030	<0.01
									1033	<0.01
									1036	<0.01
	1050	<0.01	1051	<0.01	1051	<0.01	1051	<0.01	1039	<0.01
									1042	<0.01
									1045	<0.01
									1048	<0.01
									1051	<0.01
									1054	<0.01
									1057	<0.01
									1100	<0.01
									1103	<0.01
									1106	<0.01
									1109	<0.01
									1112	<0.01
1115	<0.01									
20 June 1979 Combination Cycle 1030 to 1200	1150	<0.01	1151	<0.01	1151	<0.01	1151	<0.01	1118	<0.01
									1121	<0.01
									1124	<0.01
	1029	<0.01	1031	<0.01	1032	<0.01	1033	<0.01	1127	<0.01
									1130	<0.01
									1133	<0.01
									1136	<0.01
									1139	<0.01
									1142	<0.01
									1145	<0.01
									1027	<0.01
									1030	<0.01
									1033	<0.01
									1036	<0.01
									1039	<0.01
1042	<0.01									
1045	<0.01									
1048	<0.01									
1051	<0.01									
1054	<0.01									
1057	<0.01									
1058	<0.01	1100	<0.01	1101	<0.01	1102	<0.01	1100	<0.01	
								1103	0.05	
								1106	0.03	
								1109	0.05	
								1112	0.03	
								1115	0.03	
								1118	0.05	
								1121	0.03	
								1124	0.14	
								1127	0.12	
								1130	0.12	
								1133	0.09	
								1136	0.09	
								1139	0.07	
								1142	0.07	
1145	0.15									
1148	0.16									
1151	0.14									
1154	0.15									
1157	0.15									
1200	0.19									
1203	0.19									
1206	0.14									
1209	0.12									
1208	<0.01	1209	<0.01	1210	<0.01	1211	<0.01	1209	0.04	
								1212	0.04	
								1215	0.02	
								1218	<0.01	
								1221	<0.01	
								1224	<0.01	
								1030	<0.01	
22 June 1979 Combination Cycle 1030 to 1200	<0.01	1032	<0.01	1033	<0.01	1034	<0.01	1030	<0.01	
								1033	<0.01	
								1036	<0.01	
								1039	<0.01	
								1042	<0.01	
								1048	<0.01	
								1051	<0.01	
1054	<0.01									
1057	<0.01									

Table 1.9. (continued)

Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream Near Intake (Location 6)		Upstream of Diffuser Pipe (Location 23)		Diffuser Pipe (Location 24)		Downstream of Diffuser Pipe (Location 21)		Discharge Canal Location 7										
	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)									
22 June 1979 Combination Cycle 1030 to 1200	1100	<0.01	1102	<0.01	1103	<0.01	1104	<0.01	1100	<0.01									
									1103	<0.01									
									1106	<0.01									
									1109	<0.01									
									1112	<0.01									
									1115	<0.01									
									1118	<0.01									
									1121	<0.01									
									1124	<0.01									
									1127	<0.01									
									1130	<0.01									
									1133	0.05									
									1136	0.05									
									1139	<0.01									
									1142	<0.01									
27 June 1979 Combination Cycle 1020 to 1155	1200	<0.01	1202	<0.01	1203	<0.01	1204	<0.01	1145	<0.01									
									1148	<0.01									
									1151	<0.01									
									1154	<0.01									
									1157	<0.01									
									1200	<0.01									
									1203	<0.01									
									1206	<0.01									
									27 June 1979 Combination Cycle 1020 to 1155	1030	<0.01	1032	<0.01	1033	<0.01	1034	<0.01	1033	0.06
																		1036	0.06
																		1039	0.06
																		1042	0.10
																		1045	0.11
																		1048	0.13
																		1051	0.11
1054	0.11																		
1057	0.11																		
1100	0.11																		
1103	0.12																		
1106	0.11																		
1109	0.07																		
1112	0.10																		
1115	0.11																		
1118	0.11																		
1121	0.15																		
1124	0.13																		
1127	0.08																		
1130	0.03																		
1133	<0.01																		
1136	<0.01																		
1139	<0.01																		
1142	<0.01																		
1145	<0.01																		
1148	<0.01																		
1151	<0.01																		
1154	<0.01																		
1157	<0.01																		
27 June 1979 Combination Cycle 1020 to 1155	1200	<0.01	1202	<0.01	1203	<0.01	1204	<0.01	1200	<0.01									
									1203	<0.01									
									1206	<0.01									

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Table 1.10 Total residual chlorine concentrations measured during condenser chlorination, July 1979.

Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream Near Intake (Location 6)		Upstream of Diffuser Pipe (Location 23)		Diffuser Pipe (Location 24)		Downstream of Diffuser Pipe (Location 21)		Downstream Canal Location 7	
	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)	(hour)	(mg/l)
13 July 1979 Combination Cycle 1030 to 1155	1027	<0.01	1028	<0.01	1028	<0.01	1028	<0.01	1027	<0.01
									1030	<0.01
									1033	<0.01
									1036	<0.01
									1039	<0.01
									1042	<0.01
									1045	0.08
									1048	0.08
									1051	0.10
									1054	0.10
	1057	0.10								
	1100	0.11								
	1103	0.12								
	1106	0.14								
	1109	0.14								
	1112	0.13								
	1115	0.13								
	1118	0.11								
	1121	0.09								
	1124	0.10								
1127	0.12									
1130	0.12									
1133	0.12									
1136	0.14									
1139	0.14									
1142	0.12									
1145	0.12									
1148	0.10									
1151	0.08									
1154	0.08									
1157	0.06									
1200	<0.01									
1203	<0.01									
18 July 1979 Combination Cycle 1030 to 1155	1025	<0.01	1026	<0.01	1026	<0.01	1026	<0.01	1027	<0.01
									1033	<0.01
									1036	<0.01
									1039	<0.01
									1042	<0.01
									1045	<0.01
									1048	<0.01
									1051	0.06
									1054	0.10
									1057	0.12
	1100	0.12								
	1103	0.13								
	1106	0.12								
	1109	0.12								
	1112	0.13								
	1115	0.14								
	1118	0.13								
	1121	0.14								
	1124	0.18								
	1127	0.14								
1130	0.14									
1133	0.12									
1136	0.14									
1139	0.15									
1142	0.15									
1145	0.18									
1148	0.11									
1151	0.57									
1154	0.54									
1157	0.55									
1200	<0.01									
1203	<0.01									
1206	0.55									
1209	0.22									
1212	0.08									
1215	0.04									
1218	<0.01									
1221	<0.01									



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Table 1.10 (continued)

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Sampling Date Station Operating Cycle Hour of Chlorination	Mississippi River Upstream		Upstream of Diffuser		Diffuser Pipe		Downstream of Diffuser		Discharge Canal									
	Near Intake (Location 6) (hour)	(mg/l)	Pipe (Location 23) (hour)	(mg/l)	(Location 24) (hour)	(mg/l)	Pipe (Location 21) (hour)	(mg/l)	Location 7 (hour)	(mg/l)								
23 July 1979 Combination Cycle 1030 to 1200	1030	<0.01	1032	<0.01	1033	<0.01	1034	<0.01	1027	<0.01								
									1030	<0.01								
									1033	<0.01								
									1036	<0.01								
									1039	<0.01								
									1042	0.11								
	1045	0.11																
	1105	<0.01	1107	<0.01	1108	<0.01	1109	<0.01	1048	0.12								
									1051	0.14								
									1054	0.15								
									1057	0.15								
									1100	0.16								
									1103	0.19								
									1106	0.23								
									1109	0.23								
									1112	0.27								
									1115	0.20								
									1118	0.15								
									1121	0.15								
									1124	0.17								
									1127	0.12								
									1130	0.21								
									1133	0.23								
									1136	0.23								
1139									0.23									
1142	0.23																	
1145	0.20																	
1148	0.20																	
1151	0.19																	
1154	0.17																	
1157	0.07																	
1200	<0.01	1202	<0.01	1203	<0.01	1204	<0.01	1200	0.05									
								1203	<0.01									
								1206	<0.01									
								1209	<0.01									
								1212	<0.01									
								1215	<0.01									
								27 July 1979 Combination Cycle 1020 to 1145	1025	<0.01	1027	<0.01	1023	<0.01	1029	<0.01	1015	<0.01
																	1018	<0.01
																	1021	<0.01
																	1024	<0.01
																	1027	<0.01
																	1030	<0.01
1033	<0.01																	
1106	<0.01	1102	<0.01	1103	<0.01	1104	<0.01		1036	<0.01								
									1039	0.15								
									1042	0.18								
									1045	0.23								
									1048	0.30								
									1051	0.34								
									1054	0.34								
									1057	0.30								
									1100	0.27								
									1103	0.32								
									1106	0.33								
									1109	0.34								
									1112	0.29								
									1115	0.29								
									1118	0.20								
									1121	0.18								
									1124	0.17								
								1127	0.19									
1130	0.23																	
1133	0.28																	
1136	0.29																	
1139	0.30																	
1142	0.30																	
1145	0.30																	
1148	0.30																	
1151	0.28																	
1154	0.19																	
1157	0.19																	
1200	<0.01	1202	<0.01	1203	<0.01	1204	<0.01	1203	0.03									
								1206	<0.01									
								1209	<0.01									
								1212	<0.01									
								1215	<0.01									
								1218	<0.01									

Chapter 2

TEMPERATURE MONITORING

Gayle L. Shipley

OPERATIONAL ENVIRONMENTAL MONITORING

IN THE MISSISSIPPI RIVER NEAR QUAD-CITIES STATION

February 1979 through July 1979

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# HAZLETON ENVIRONMENTAL SCIENCES

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## Chapter 2

### TEMPERATURE MONITORING

by

Gayle L. Shipley

#### I. Introduction

This report presents the results of continuous monitoring of water temperature in the Mississippi River near the Quad-Cities Station from February through July 1979.

The objectives of this study were:

1. to provide an hourly record of the temperature regime of the Mississippi River in the vicinity of the Quad-Cities Station including the observation of any downstream thermal changes resulting from station operation; and
2. to identify diurnal, seasonal, and other normal or periodic variations in river water temperature.

#### II. Field and Analytical Procedures

Eight sensors were used to record temperatures hourly near the Quad-Cities Station. One sensor was located upstream near the Illinois shore. Four sensors were placed along a transect 600 ft downstream from the diffuser pipes. One sensor was placed at the entrance to the intake bay in the center of the opening. One sensor was in the discharge bay near the port to the diffuser pipes. One sensor was in the cooling canal at the cold end. The sensors were two to three feet above the river bottom. Temperatures were also measured manually upstream in the mid-channel of the Mississippi River and in the Wapsipinicon River on a weekly basis.

Water temperatures at the continuous monitoring locations were measured in situ with ultralinear silicon sensors having a range of 32 to 100F (0 to 38C) and an accuracy of  $\pm 1.0\%$  of full scale. The sensors were wired to the station control room. The output of the analyzers was continuously recorded on a Honeywell class 15 multipoint recorder.

To check the operation of the continuous sensors, manual temperature readings were taken at weekly intervals with a calibrated Whitney thermometer. The observed temperatures were compared to those on the Honeywell recorder to insure correct system functioning.

Prior to temperature sensor installation, the 32F and 100F points on the analyzer scale were set using individual resistance (ohm) inputs for the cable

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and sensor. On occasions when discharge temperatures exceeded 100F, adjustments were performed on the analyzer to permit recording. Temperatures measured manually at the upstream, mid-channel location in the Mississippi River and in the Wapsipinicon River were obtained using a calibrated Whitney thermometer.

Minimum, maximum, and mean values for temperature were calculated on a daily basis throughout the study period. To facilitate interpretation of data downstream from the diffusers, temperatures downstream at sensor locations A, B, C, and D were averaged.

Daily and monthly maximum and mean temperature differences ( $\Delta T$ ) were computed from hourly differences. These hourly differences were obtained by subtracting temperatures at the station's intake from those at the discharge, and upstream temperatures from those downstream from the station. In determining the maximum daily  $\Delta T$  values, the largest hourly difference between the highest reading of the four downstream sensors and the temperature recorded by the upstream sensor at the same hour was used.

### III. Results and Discussion

#### A. Natural Variations in River Water Temperature

Upstream temperatures in the Mississippi River near the Quad-Cities Station during February through July 1979 followed typical seasonal trends and ranged from 32.0 to 81.9F (Table 2.1; see also Appendix A).

Temperatures in the Mississippi River upstream and downstream from the station were affected by factors unrelated to station operation. These factors included both climatic and hydrological conditions. Examples of the latter were the influence of the Wapsipinicon River, which caused significant temperature variation in the Mississippi River near its confluence, and surface runoff into shallow waters.

Temperatures at the upstream sensor, located in relatively shallow water, reflected the influence of natural factors to a greater extent than either upstream or downstream main channel temperatures. Temperatures at the two upstream locations usually were similar; however, the effects of solar absorption, changes in atmospheric temperature, and surface runoff were more pronounced in shallow water and occasionally led to temperature differences between these locations (Appendices C and G). In addition, warming of shallow water by solar radiation or surface runoff periodically resulted in negative  $\Delta T$  values between the upstream and downstream locations (Appendix B).

Findings similar to those discussed above were observed in Langford's study (1972) which indicated that significant variations in water temperature may occur due to changing hydrological and meteorological conditions unrelated to station operation.

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Table 2.1. Monthly mean, minimum and maximum temperatures, Quad-Cities Station, February through July 1979.

Month	Min.-Max. <sup>a</sup>	Temperature (°F)				
		Upstream	Intake	Cooling Canal	Discharge	Downstream
February 1979	mean	32.1	36.2	57.4	80.3	32.1
	min.-max.	32.0-32.8	32.0-67.5	32.0-82.3	51.3-106.8	32.0-33.7
March 1979	mean	32.7	37.2	74.8	85.9	32.7
	min.-max.	32.0-38.7	32.0-61.5	60.9-89.1	64.2-106.8	32.0-38.2
April 1979	mean	42.8	45.4	75.2	87.5	44.3
	min.-max.	34.2-54.9	34.6-56.6	59.4-89.1	64.8-100.5	34.3-54.1
May 1979	mean	62.8	61.0	79.3	92.0	60.9
	min.-max.	52.5-68.9	48.8-70.0	63.3-89.7	67.5-107.0	49.5-68.4
June 1979	mean	72.6	72.5	86.7	101.1	72.4
	min.-max.	67.2-78.5	66.2-79.8	76.2-93.4	93.5-101.9	66.7-76.8
July 1979	mean	78.0	77.8	92.4	106.7	78.5
	min.-max.	74.0-81.9	72.8-81.9	85.0-97.2	110.0-117.5	73.6-82.6

<sup>a</sup>Minimum and maximum hourly temperatures recorded during each month.

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### B. Station Related Variations in Water Temperature

The maximum monthly temperature differences in the river upstream and downstream from the station ranged from 1.7 to 4.3 F between February and July 1979; monthly mean  $\Delta T$  values ranged from <0.1 to 0.5 F. A summary of temperature differences between the discharge and intake as well as between sensors downstream and upstream from the station is presented in Table 2.2 along with power output. Daily maximum and mean  $\Delta T$  values are shown in Appendix B.

Temperature differences between downstream and upstream sensors for the August to January period complied with the standard for thermal discharge in the Mississippi River promulgated by the Illinois Pollution Control Board (1972).

During August 1977 through July 1979, heated water from the spray canal was occasionally observed entering the intake bay area. This flow of warm water from the spray canal occurred during periods of closed cycle cooling and frequently elevated water temperatures near the intake temperature sensor location (Appendix C).

### IV. Summary and Conclusions

1. Monthly mean differences in the Mississippi River water temperatures downstream and upstream from the Quad-Cities Station during the February through July 1979 study period ranged from <0.1 to 0.5 F.
2. Temperatures in the river were in compliance with Illinois' thermal standards during the February through July 1979 period of study.
3. Natural hydrological and meteorological factors resulted in significant temperature differences among sensors that were unrelated to station operation.
4. During the February through July 1979 study period, temperatures measured at the intake sensor were frequently elevated by the heated water from the spray canal while closed cycle cooling was utilized.

### V. References Cited

- Illinois Pollution Control Board. 1972. Illinois pollution control board rules and regulations Chapter 3: water pollution. Part II: Water Quality Standards. Rule 203 General Standards, 7 March 1972. Including amendments adopted on or before 6 March 1975. 36 pp.
- Langford, T. E. 1972. A comparative assessment of thermal effects in some British and North American rivers. Pages 319-351 in R. T. Oglesby, C. A. Carlson, and J. A. McCann, eds. River ecology and man. Academic Press, New York.

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Table 2.2. Monthly maximum and mean temperature differences( $\Delta T$ ), and average megawatt power output, Quad-Cities Station, February through July 1979.

Month and Year	Temperature Difference ( $^{\circ}F$ )				Average Megawatt Output (percent of capacity)		
	Discharge Minus Intake		Downstream Minus Upstream		Unit 1	Unit 2	Total Station
	Max.	Mean	Max.	Mean			
February 1979	66.7	44.5	1.7	<0.1	0	79	40
March 1979	68.4	50.7	1.8	<0.1	79	81	80
April 1979	51.7	42.1	3.9	<0.1	90	74	82
May 1979	44.9	34.0	3.4	0.5	68	82	75
June 1979	34.8	27.2	4.3	<0.1	94	79	86
July 1979	36.6	29.1	4.6	0.3	94	75	84

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Chapter 3

CHEMICAL USE

Margaret A. George

OPERATIONAL ENVIRONMENTAL MONITORING

IN THE MISSISSIPPI RIVER NEAR QUAD-CITIES STATION

February 1979 through July 1979

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Chapter 3

CHEMICAL USAGE

by

Margaret A. George

I. Introduction

The purpose of this chapter is to document chemical usage at the Quad-Cities Station including chlorine consumption (chlorine demand). A monthly log of chemicals used in connection with demineralizers and circulating and service water is tabulated in compliance with U.S. Nuclear Regulatory Commission (1974) requirements. The data for this chapter were obtained by Hazleton ES personnel from Station personnel for inclusion in this report.

II. Field and Analytical Procedures

Water samples for chlorine analysis were collected at the Station's inlet water box approximately three times per week. Free chlorine consumption was determined in accordance with surveillance requirements approved by the U.S. Nuclear Regulatory Commission (1974). These samples were collected through a bypass valve located at the inlet water box and were representative of intake cooling water used by the Station.

All samples were collected by Quad-Cities Station personnel and analyzed using a Wallace and Tiernan or Fischer and Porter Amperometric Titrator by Method 409C (A.P.H.A. et al. 1976), which has an analytical detection limit of 0.01 mg/l.

III. Results and Discussion

The results of chlorine analyses have been compiled in Table 3.1. A summary of monthly chemical use and consumption at the station has been tabulated in Table 3.2 to comply with U.S. Nuclear Regulatory Commission specifications (1974).

IV. References Cited

- A.P.H.A., A.W.W.A., and W.P.C.F. 1976. Standard methods for the examination of water and wastewater. 14th ed. Amer. Public Health Assn., Washington, D.C. 1193 pp.
- U.S. Nuclear Regulatory Commission. 1974. Appendix B to operating license DPR-29 and DPR-30: non-radiological technical specifications and bases for Quad-Cities Station Unit 1 and 2 Rock Island, Illinois. Commonwealth Edison Company and Iowa-Illinois Gas and Electric Company. Docket numbers 50-254 and 50-265. Washington, D.C. 15 pp.

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Table 3.1. Chlorine dose, free chlorine residual, free chlorine consumption and sodium hypochlorite injection flow rate into condensers at the Quad-Cities Station, February through July 1979, as provided by Quad-Cities Station personnel.

Date	Chlorine Dose (mg/l-NaOCl)	Free Chlorine Residue (mg/l)	Free Chlorine Consumption (mg/l) <sup>a</sup>	Sodium Hypochlorite Injection Flow Rate Into Condensers (gallons/minute) <sup>b</sup>
5 February 1979	2.20	0.95	1.25	4.98 <sup>c</sup>
6	2.20	0.25	1.95	4.98
7	2.20	0.42	1.75	4.98
13	2.55	0.75	1.80	5.40
14	2.55	0.50	2.05	6.15
16	2.55	0.45	2.10	6.30
19	2.48	0.78	1.70	5.1
20	2.48	0.94	1.51	4.53
23	2.48	0.78	1.70	5.1
26	2.41	1.10	1.31	4.00
28	2.41	0.50	1.91	4.25
5 March	2.27	0.65	1.62	4.86
6	2.27	0.65	1.62	4.23
7	2.27	0.26	2.01	6.14
9	2.36	0.07	2.29	6.58
13	2.37	1.22	1.15	5.70
16	2.37	1.32	1.05	3.15
19	2.55	0.68	1.87	5.61
21	2.55	1.24	1.31	3.93
23	2.55	1.72	0.83	2.49
26	2.98	2.47	0.51	3.80
28	2.98	2.22	0.76	4.19
30	2.98	2.47	0.51	3.80
2 April	2.98	2.51	0.47	5.8
4	2.98	1.53	1.46	No injection <sup>d</sup>
6	2.98	1.28	1.70	No injection <sup>d</sup>
9	2.95	0.98	1.97	4.03
12	2.98	1.80	1.18	4.18
16	2.77	1.94	0.83	3.06
20	2.77	1.44	1.33	2.28
23 <sup>e</sup>	2.84	1.47	1.37	10.1
24	2.84	1.82	1.02	6.93
27	2.84	2.00	0.84	19.31
30	2.84	1.88	0.96	8.80
4 May	2.91	1.84	1.07	19.70
5	2.91	1.26	1.65	14.90
7	2.98	1.82	1.16	19.80
9	2.50	1.05	1.45	8.45
11	2.55	1.17	1.38	17.76
14	2.55	1.05	1.50	7.6

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Table 3.1 (continued)

Date	Chlorine Dose (mg/l-NaOCl)	Free Chlorine Residue (mg/l)	Free Chlorine Consumption (mg/l) <sup>a</sup>	Sodium Hypochlorite Injection Flow Rate Into Condensers (gallons/minute) <sup>b</sup>
May (continued)				
18	2.55	0.79	1.76	18.4
22	2.09	1.26	0.83	10.2
24	2.02	1.53	0.49	5.45
30	1.98	0.93	1.05	10.64
31	1.98	0.76	1.22	10.91
6 June				
5	1.98	0.88	1.10	10.77
11	1.98	0.46	1.52	8.94
15	1.98	1.17	0.81	10.26
18	2.27	1.02	1.25	11.33
20	2.27	0.75	1.52	8.23
22	2.27	1.35	0.92	19.50
25	2.27	1.35	0.92	10.44
27	2.27	1.02	1.25	20.00
6 July				
6	2.34	1.56	0.78	No injection <sup>d</sup>
7	2.34	1.69	0.65	No injection <sup>d</sup>
9	2.30	0.94	1.36	No injection <sup>d</sup>
11	2.30	0.94	1.36	9.95
16	2.70	1.94	0.76	13.50 <sup>f</sup>
17	2.70	1.53	1.16	13.50
24	2.70	1.01	1.69	4.20
26	3.39	1.47	1.92	6.75

<sup>a</sup>Free chlorine consumption = chlorine dose - free chlorine residual.

<sup>b</sup>Sodium hypochlorite flow rate injection into condensers -  $\frac{A \times B}{1.92}$

A = total chlorine dose (free chlorine consumption + excess).

B = maximum number of operating circulating water pumps for either unit.

<sup>c</sup>During the week of 5 February 1979 no field analyses were conducted. Values calculated using previous weeks correction factor.

<sup>d</sup>No injection - pumps out of service.

<sup>e</sup>Starting the week of 23 April 1979 and continuing through the end of July 1979 chlorine injection time increased from 20 to 40 minutes.

<sup>f</sup>Based on data obtained 17 July 1979.

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Table 3.2. Chemical usage and consumption at the Quad-Cities Station, February through July 1979, as provided by Quad-Cities Station personnel.

Usages and Chemicals	Feb 1979	Mar 1979	Apr 1979	May 1979	June 1979	July 1979	Jan - Jul 1979
<u>Demineralizers</u>							
Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> ) (pounds)	17,526	11,580	3,860	8,841	7,720	6,755	68,018
Sodium hydroxide (NaOH) (pounds)	6,727	4,200	1,800	2,827	3,000	2,400	25,581
<u>Circulating and Service Water</u>							
Sodium hypochlorite (NaOCl) (pounds)	145,551	355,348	127,260	507,828	814,464	756,288	2,833,641
<u>Domestic Water and Sewage</u>							
Sodium hypochlorite (NaOCl) (pounds)	20	20	20	20	20	20	140
<u>Closed Cooling Water</u>							
Sodium nitrite (NaNO <sub>2</sub> ) (pounds)	23	20	43	10	10	30	163

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Chapter 4

IMPINGEMENT INVESTIGATION

Gary Wilson Lutterbie

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OPERATIONAL ENVIRONMENTAL MONITORING

IN THE MISSISSIPPI RIVER NEAR QUAD-CITIES STATION

February 1979 through July 1979

# HAZLETON ENVIRONMENTAL SCIENCES

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Chapter 4

IMPINGEMENT INVESTIGATION

By

Gary Wilson Lutterbie

I. Introduction

Impingement investigations have been conducted by Hazleton Environmental Sciences since 1973 (Johnson 1973, Latvaitis et al. 1974, 1977, Latvaitis 1974, 1975a, 1975b, 1976a, 1976b, 1976c, Pallo and Latvaitis 1977, Pallo 1977, 1978a, 1978b). The present report discusses the results of studies conducted during the period February 1979 through July 1979 to evaluate the nature and magnitude of fish impingement at the Quad-Cities Station.

Quad-Cities Station employs three protective structures to prevent submerged and floating debris and fishes from entering the plant intake pumps and condenser tubes. The first of these structures is a floating boom at the mouth of the intake canal designed to prevent the entrance of logs or the large floating materials into the canal. The second protective structure is a series of vertical bar grills with three-inch spacings which are located in front of the crib house entrance. Directly behind the bar grills are the standard traveling screens with 3/8 inch square openings which are employed to further reduce the entrainment of fishes and debris. Materials that are trapped on the vertical bar grills are removed by a mechanical lift and dumped into a trash basket. Small materials impinged by the intake current onto the traveling screens are retained on these screens until washed into trash baskets at pre-set time intervals or when screens are activated by reduction in intake water volume due to the collection of debris. A schematic representation of the intake structure is presented in Figure 4.1.

II. Field and Analytical Procedures

Twice per week trash baskets were allowed to accumulate fishes and debris for approximately 24 hours. Small mesh (3/8" x 3/8") trash baskets were used exclusively during the period covered by this report. Fishes contained in each 24 hour collection were identified, counted, and length range, average weight, total weight and incidence of parasitism were recorded by species. Scientific and common names of all fishes reported follow Bailey (1970).

III. Results and Discussion

Results of counts, relative abundance and weight determinations of impinged fishes collected during February 1979 through July 1979 are presented in Table 4.1. A total of 7,886 fishes were collected during 55 sampling days. Total number, weights and fish species impinged and collected varied among the sampling dates. The three most abundant fishes impinged were mooneyes, freshwater drum and gizzard shad, comprising 28.4, 18.6 and 12.5% respectively, (59.5% in total) of the numerical catch. The remaining catch was distributed among 58 species.

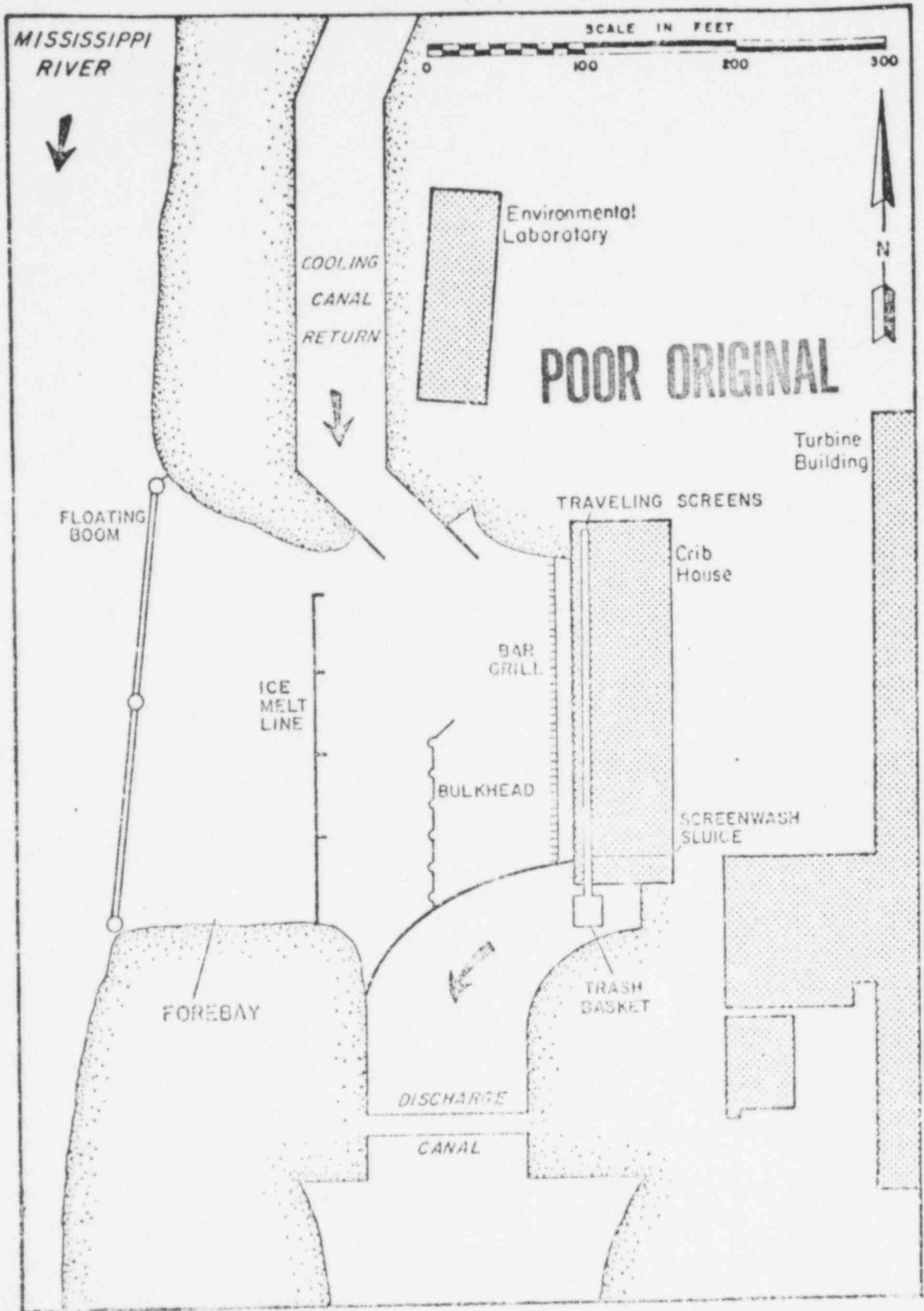


Figure 4.1. Schematic representation of the Quad-Cities Station intake bay.

Table 4.1. Number, total weight, average weight per fish, relative abundance and total length range of fishes removed from traveling intake screens and collected from trash baskets at Quad-Cities Station, February 1979 through July 1979.

Species	February	March	April	May	June	July	Total Weight (grams)	Average Weight (grams)	Total Number	Percentage of Total catch	Total Length Range (mm)
Silver lamprey	1	1	1	0	2	0	268	53.6	5	0.06	247-320
Showelose sturgeon	0	0	0	1	0	0	15	15.0	1	0.01	-290
Paddlefish	0	0	1	0	0	0	366	366.0	1	0.01	-554
Longnose gar	1	1	24	7	0	8	11,778	287.3	41	0.52	74-744
Shortnose gar	1	3	9	1	1	24	5,882	150.8	39	0.49	117-595
Bowfin	0	0	1	0	20	14	3,232	92.3	35	0.44	121-526
Gizzard shad	810	104	13	8	1	50	76,619	77.7	986	12.50	48-405
Goideye	0	0	0	0	1	0	455	455.0	1	0.01	-367
Mooneye	5	1,867	242	54	22	51	278,775	124.4	2,241	28.42	52-368
Brown trout	0	0	0	1	0	0	68	68.0	1	0.01	-197
Central mudminnow	0	1	3	1	0	0	49	9.8	5	0.06	79-121
Grass pickerel	0	0	5	0	3	2	293	20.3	10	0.13	81-195
Northern pike	0	0	2	0	17	4	2,021	87.9	23	0.29	92-384
Carp	0	6	1	0	10	37	10,384	192.3	54	0.68	28-485
Silver chub	0	2	27	0	11	26	785	11.8	66	0.84	57-178
Golden shiner	0	0	2	3	0	0	82	16.4	5	0.06	73-140
Pallid shiner	0	0	1	0	0	0	1	1.0	1	0.01	-56
Emerald shiner	4	2	1	3	23	2	114	3.2	35	0.44	63-97
River shiner	0	2	0	0	0	1	7	2.3	3	0.04	58-70
Spottfin shiner	0	0	0	0	0	1	6	6.0	1	0.01	-85
Spottail shiner	1	0	0	0	0	0	19	19.0	1	0.01	-137
Weed shiner	0	0	0	0	1	0	3	3.0	1	0.01	-55
Fathead minnow	0	1	1	0	0	0	7	3.5	2	0.02	62-76
Bullhead minnow	0	0	0	0	0	1	3	3.0	1	0.01	-70
Creek chub	0	0	2	0	0	0	76	38.0	2	0.02	139-186
Carpoides sp.	0	1	0	2	14	0	119	7.0	17	0.22	58-111
River carpsucker	4	9	9	4	0	3	5,589	192.7	29	0.37	80-455
Quillback	0	10	1	2	0	0	2,678	206.0	13	0.16	155-365
Highfin carpsucker	0	0	1	0	0	0	331	331.0	1	0.01	-292
Ictiobus sp.	0	0	0	0	4	193	348	1.8	197	2.50	23-80
Smallmouth buffalo	2	8	6	5	3	1	9,738	318.3	25	0.32	85-460
Bigmouth buffalo	0	1	1	0	0	6	829	103.6	8	0.10	47-350
Black buffalo	0	0	0	0	1	0	2,200	2200.0	1	0.01	-549
Spotted sucker	0	1	0	0	0	0	431	431.0	1	0.01	-375
Spotthead redhorse	0	1	2	1	14	1	2,151	113.2	19	0.24	76-412
Black bullhead	0	9	340	4	2	1	14,791	41.5	356	4.51	58-234
Yellow bullhead	0	0	1	0	0	0	8	8.0	1	0.01	-94
Channel catfish	17	102	260	116	55	59	29,100	47.8	609	7.72	39-550
Stonecat	0	0	0	4	2	6	136	11.3	12	0.15	76-771
Tadpole madtom	0	5	8	3	10	6	147	4.6	32	0.40	53-105
Flathead catfish	7	9	8	1	0	0	1,766	70.6	25	0.32	72-438
Trout - perch	0	0	1	0	0	0	4	4.0	1	0.01	-35
White bass	23	18	32	15	1	284	12,618	33.8	373	4.73	36-340
Yellow bass	0	0	1	0	0	0	190	190.0	1	0.01	-283
Rock bass	0	0	0	0	1	0	97	97.0	1	0.01	-165
Green sunfish	0	0	3	3	2	0	154	19.2	8	0.10	66-121
Pumpkinseed	0	8	27	7	0	0	168	4.0	42	0.53	45-105
Warmouth	0	1	0	0	0	0	12	12.0	1	0.01	-91
Orangespotted sunfish	0	1	8	2	7	6	151	6.3	24	0.30	50-94
Bluegill	4	32	120	233	112	4	17,603	34.8	505	6.40	27-190
Largemouth bass	0	2	4	3	5	10	1,301	54.2	24	0.30	65-294
Pomoxis sp.	0	0	0	0	3	160	205	1.2	163	2.07	36-67
White crappie	3	3	15	26	26	5	3,207	41.1	78	0.90	66-264
Black crappie	0	4	38	29	31	10	5,894	52.6	112	1.40	65-270
Yellow perch	0	2	53	2	3	4	2,968	46.4	64	0.80	46-269
Logperch	2	5	11	2	0	0	84	4.2	20	0.20	71-86

HAZLETON ENVIRONMENTAL SCIENCES

POOR ORIGINAL

Table 4.1 Continued

Species	February	March	April	May	June	July	Total Weight (grams)	Average Weight (grams)	Total Number	Percentage of Total catch	Total Length Range (mm)
River darter	0	1	35	1	0	1	148	3.7	38	0.40	50- 78
<i>Stizostedion</i> sp.	0	0	0	0	1	12	29	2.2	13	0.10	51- 90
Sauger	2	3	4	3	13	1	2,889	111.1	26	0.30	148-345
Walleye	1	5	4	2	1	2	1,274	84.9	15	0.10	90-325
Freshwater drum	163	178	649	338	21	121	163,747	111.4	1,470	18.60	40-489
Total number	1,051	2,409	1,978	887	644	1,117			7,886		
Total species	18	36	44	33	35	35			61		
Total weight (gr.)	76,269	299,911	175,892	83,978	26,106	12,167	674,323				
Sampling days	8	8	11	10	8	10					



## HAZLETON ENVIRONMENTAL SCIENCES

The total weight of impinged fishes was 674,323 gm (1485 lbs.). The bulk of the catch by weight consisted of mooneyes (41.3%), freshwater drum (24.3%) and gizzard shad (11.4%).

The mooneye catch consisted primarily of juveniles and adults, whereas the catch of gizzard shad and freshwater drum was mainly young-of-the-year and juveniles. The average weight for the other species of 48.6 gm, would indicate that the majority of other fishes impinged were young-of-the-year and juveniles.

Parasitized fishes were few during the study period. The most common parasite observed was Philometra sp. This nematode was most frequently observed in the freshwater drum (Table 4.2).

No federal, Illinois or Iowa (Miller 1972, Smith 1979, Roosa 1977) endangered fish species were observed in impingement collections.

#### IV. Summary and Conclusions

The most abundant fishes impinged during February 1979 through July 1979 were juvenile and adult mooneyes, and juvenile and young-of-the-year freshwater drum and gizzard shad. The majority of additional fish species impinged also consisted of young-of-the-year and juveniles.

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Table 4.2. External parasites of impinged fishes enumerated during impingement studies at Quad-Cities Station, February 1979 through July 1979.

Month	Infected Species	Disorder	Number Afflicted
February	Carp	Popeye <sup>a</sup>	1
	Freshwater drum	Popeye	7
March	Freshwater drum	Popeye	69
	Carp	Popeye	1
April	Creek chub	Black spot <sup>b</sup>	4
	Freshwater drum	Popeye <sup>c</sup>	44
	Freshwater drum	Fungus <sup>c</sup>	12
	Creek chub	Fungus	1
	Black bullhead	Fungus	29
	Channel catfish	Fungus	11
	Yellow perch	Black spot	1
May	Bluegill	Fungus	2
	Freshwater drum	Popeye	1
June	None	-	-
July	Spotfin shiner	Anchor worm <sup>d</sup>	1

<sup>a</sup> Philometra sp.

<sup>b</sup> Neaseus sp. or Uvulifer sp.

<sup>c</sup> Saprolegnia sp.

<sup>d</sup> Lernaea cyprinacea

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APPENDIX A

(Related to Chapter 2 of Text)

SUMMARY OF DAILY MINIMUM, MAXIMUM AND  
MEAN WATER TEMPERATURES

QUAD-CITIES STATION

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February 1979 through July 1979

TABLE 1. SUMMARY OF DAILY MINIMUM, MAXIMUM, AND MEAN WATER TEMPERATURES (F),  
DUAD-CITIES STATION, FEBRUARY, 1979.

DAY	UPSTREAM			INTAKE			COOLING CANAL COLD END			DISCHARGE			DOWNSTREAM		
	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN
1	32.0	32.0	32.0	32.0	67.5	34.4	51.2	58.7	55.9	54.0	83.3	70.0	32.0	32.7	32.0
2	32.0	32.0	32.0	32.0	32.0	32.0	46.0	50.6	47.7	55.0	70.0	58.4	32.0	32.3	32.0
3	32.0	32.0	32.0	32.0	32.1	32.0	38.2	45.9	43.3	50.3	57.7	53.7	32.0	32.0	32.0
4	32.0	32.1	32.0	32.0	32.2	32.0	32.0	37.5	33.4	51.3	75.2	55.8	32.0	32.2	32.0
5	32.0	32.0	32.0	32.0	32.0	32.0	33.0	34.0	33.5	70.7	76.3	75.5	32.0	32.0	32.0
6	32.0	32.2	32.0	32.0	44.9	34.2	22.0	37.7	33.0	73.7	85.7	76.3	32.0	32.0	32.0
7	32.0	32.1	32.0	41.5	46.8	44.5	50.3	66.5	57.9	88.3	101.8	95.4	32.0	32.0	32.0
8	32.0	32.2	32.0	43.0	46.0	44.5	46.0	51.0	48.9	93.5	96.8	95.1	32.0	32.0	32.0
9	32.0	32.2	32.0	41.5	45.7	44.0	40.1	72.8	52.1	90.1	95.2	92.4	32.0	32.7	32.0
10	32.0	32.1	32.0	33.5	50.3	41.3	57.9	82.2	70.7	*9999	*9999	*9999	32.0	32.0	32.0
11	32.0	32.0	32.0	32.0	40.5	37.0	44.2	59.5	53.6	*9999	*9999	*9999	32.0	32.0	32.0
12	32.0	32.1	32.0	32.0	41.7	36.4	32.0	47.0	41.5	67.3	73.0	72.4	32.0	32.6	32.1
13	32.0	32.1	32.0	32.0	42.7	39.2	43.5	56.5	51.6	67.0	96.0	82.4	32.0	32.0	32.1
14	32.0	32.2	32.0	35.7	40.6	36.0	51.4	57.5	54.2	89.8	101.4	97.5	32.0	32.4	32.4
15	32.0	32.2	32.0	34.7	43.0	38.2	51.0	57.3	54.9	78.3	103.7	100.5	32.0	33.2	32.3
16	32.0	32.3	32.1	32.0	37.2	34.9	56.8	68.0	64.5	72.4	85.1	79.5	32.0	32.2	32.0
17	32.0	32.2	32.0	33.0	39.8	35.5	61.8	66.3	64.1	75.5	80.3	78.0	32.0	32.0	32.0
18	32.0	32.2	32.1	32.0	39.8	33.8	54.0	63.3	59.0	59.0	77.5	64.5	32.0	32.3	32.0
19	32.0	32.3	32.1	32.0	42.2	35.8	53.5	61.0	56.6	60.5	70.1	64.5	32.0	32.0	32.0
20	32.0	32.8	32.2	32.0	37.7	32.9	60.8	68.3	63.7	65.4	81.5	72.8	32.0	32.5	32.1
21	32.0	32.7	32.1	32.0	39.0	33.6	65.5	72.0	68.6	76.7	90.1	83.3	32.0	32.9	32.1
22	32.0	32.3	32.1	33.2	51.3	42.2	72.2	75.7	73.5	89.7	96.3	92.3	32.0	33.0	32.3
23	32.0	32.3	32.1	33.5	45.8	38.3	67.8	79.3	72.9	72.6	99.7	89.1	32.0	32.2	32.1
24	32.0	32.7	32.3	32.0	46.6	35.8	67.7	73.9	71.9	83.5	93.3	88.9	32.0	33.6	32.4
25	32.0	32.7	32.4	32.0	34.8	32.1	62.6	67.2	65.1	78.5	86.4	82.0	32.0	32.2	32.3
26	32.2	32.7	32.3	32.0	38.0	33.0	57.2	78.0	72.4	88.3	98.7	93.1	32.0	33.0	32.1
27	32.0	32.7	32.3	32.0	32.0	32.0	70.8	79.7	73.6	85.0	93.5	89.0	32.0	33.2	32.1
28	32.0	32.7	32.2	32.0	55.5	33.5	62.1	78.1	70.4	66.8	106.8	83.6	32.0	33.7	32.4

\*9999 OR 9999 -- INSTRUMENT MALFUNCTION

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HAZLETON ENVIRONMENTAL SCIENCES

POOR ORIGINAL

TABLE 2. SUMMARY OF DAILY MINIMUM, MAXIMUM, AND MEAN WATER TEMPERATURES (F),  
 QUAD-CITIES STATION, MARCH 1979

DAY	UPSTREAM			INTAKE			COOLING CANAL COLD END			DISCHARGE			DOWNSTREAM		
	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN
1	32.0	32.7	32.1	32.0	32.5	32.1	62.1	69.9	65.1	65.0	71.8	67.2	32.0	32.5	32.5
2	32.0	32.2	32.1	32.0	32.7	32.1	60.9	66.8	63.4	64.2	73.4	69.6	32.0	32.8	32.3
3	32.0	32.2	32.0	32.0	32.0	32.0	66.8	84.3	76.5	75.2	95.0	88.2	32.0	32.4	32.0
4	32.0	32.6	32.1	32.0	32.0	32.0	67.1	84.0	73.1	79.5	94.6	83.3	32.0	33.2	32.2
5	32.0	32.5	32.1	32.0	33.0	32.2	70.4	76.8	73.5	85.0	97.2	91.0	32.0	33.1	32.2
6	32.0	32.8	32.2	32.0	33.2	32.3	9999	9999	9999	86.4	100.4	94.6	32.0	33.5	32.3
7	32.0	32.5	32.2	32.0	32.8	32.1	9999	9999	9999	65.9	88.0	77.7	32.0	33.2	32.3
8	32.1	32.6	32.3	32.0	32.8	32.2	74.3	76.9	75.4	72.5	91.3	83.7	32.0	33.2	32.2
9	32.0	33.1	32.3	32.0	44.6	35.1	76.8	79.9	78.3	91.5	95.7	93.4	32.0	32.3	32.1
10	32.0	32.9	32.2	32.0	48.4	44.5	78.3	80.1	78.9	9999	9999	9999	32.0	32.6	32.0
11	32.0	33.1	32.3	32.0	48.8	41.2	75.8	83.1	80.1	9999	9999	9999	32.0	32.8	32.1
12	32.0	33.2	32.3	40.1	6.6	44.8	81.2	86.1	83.9	9999	9999	9999	32.0	32.6	32.1
13	32.0	73.4	32.5	43.3	49.1	45.9	81.6	89.1	86.1	95.4	106.8	100.8	32.0	32.8	32.1
14	32.0	32.3	32.0	44.5	50.0	47.5	80.8	84.6	82.0	96.2	102.5	98.4	32.0	32.4	32.0
15	32.0	32.3	32.0	45.0	49.3	47.6	9999	9999	9999	9999	9999	9999	32.0	32.5	32.1
16	32.0	32.5	32.1	32.0	48.4	39.2	9999	9999	9999	9999	9999	9999	32.0	33.2	32.5
17	32.0	32.0	32.0	32.0	33.0	32.0	9999	9999	9999	9999	9999	9999	32.0	33.2	32.3
18	32.0	32.8	32.2	32.0	38.2	33.0	9999	9999	9999	9999	9999	9999	32.0	33.0	32.5
19	32.0	32.8	32.3	32.0	48.0	41.3	9999	9999	9999	9999	9999	9999	32.2	33.8	32.8
20	32.0	32.3	32.1	32.0	42.3	40.6	9999	9999	9999	9999	9999	9999	32.0	33.7	32.5
21	32.0	32.3	32.0	36.8	61.5	48.2	9999	9999	9999	9999	9999	9999	32.0	32.8	32.1
22	32.0	32.6	32.2	33.8	38.0	36.1	9999	9999	9999	9999	9999	9999	32.0	32.7	32.2
23	32.0	33.8	33.1	34.2	43.2	37.1	9999	9999	9999	9999	9999	9999	32.0	34.3	33.2
24	32.1	33.0	32.4	32.0	41.8	35.4	9999	9999	9999	9999	9999	9999	32.0	33.7	33.0
25	32.0	32.5	32.1	32.0	32.3	32.1	9999	9999	9999	9999	9999	9999	32.0	33.6	32.6
26	32.3	32.7	32.5	32.6	33.2	32.8	9999	9999	9999	9999	9999	9999	32.0	33.5	32.8
27	32.2	33.7	32.8	32.6	33.7	33.2	62.8	63.8	63.4	73.3	76.7	76.0	32.0	34.6	32.9
28	33.4	34.4	34.0	33.2	35.0	34.0	63.4	74.3	68.6	70.4	90.1	82.1	32.8	34.8	33.8
29	33.8	35.8	34.6	34.8	36.5	35.4	71.5	76.7	73.9	86.5	90.7	89.5	33.5	35.9	34.5
30	35.6	38.7	37.5	36.7	42.2	39.6	70.7	77.3	74.6	89.0	93.5	91.0	34.1	38.2	35.9
31	37.7	38.7	38.1	40.8	42.4	41.7	71.0	72.2	71.7	89.0	91.9	90.3	35.0	38.1	36.5

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 9999 OR 9999 -- INSTRUMENT MALFUNCTION

TABLE 3. SUMMARY OF DAILY MINIMUM, MAXIMUM, AND MEAN WATER TEMPERATURES (F),  
QUAD-CITIES STATION, APRIL 1979.

DAY	UPSTREAM			INTAKE			SOUTH INTAKE			DISCHARGE			DOWNSTREAM		
	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN
1	35.8	37.6	36.7	38.8	40.8	39.9	66.4	71.5	68.8	80.4	83.0	82.2	34.7	37.6	36.5
2	35.2	36.2	35.6	34.9	36.1	35.4	69.8	70.8	70.3	82.1	83.3	82.8	34.5	36.5	35.4
3	34.9	36.7	35.6	34.6	36.2	35.7	70.2	73.2	71.7	82.5	87.9	84.9	34.2	37.2	35.5
4	35.3	37.4	36.5	36.8	37.4	37.0	70.1	73.7	72.1	81.3	86.8	84.8	35.0	37.6	36.4
5	35.4	38.0	36.9	36.5	36.7	37.5	59.5	73.8	68.7	73.4	86.8	82.1	38.3	39.8	39.1
6	34.2	36.5	35.4	33.5	36.2	34.8	59.4	70.5	65.4	71.0	83.5	78.8	35.6	39.4	37.8
7	36.0	37.5	36.7	35.1	37.4	36.5	64.8	70.6	67.4	70.5	83.6	74.9	36.4	39.5	38.0
8	37.3	38.0	37.6	37.4	38.6	38.0	65.0	71.6	68.4	71.7	84.9	79.3	37.3	39.6	38.2
9	9999	9999	9999	37.0	38.6	38.3	70.5	72.7	71.6	83.7	86.9	85.2	37.5	39.8	38.1
10	9999	9999	9999	37.0	38.9	37.9	70.0	72.5	71.4	81.5	85.4	84.0	36.9	38.8	37.7
11	9999	9999	9999	37.5	39.1	38.6	69.0	72.0	70.4	81.0	86.5	83.9	35.5	39.7	38.2
12	39.0	42.5	41.0	38.6	43.5	40.8	71.1	77.5	75.6	84.0	90.9	88.9	35.6	43.3	40.2
13	42.1	44.0	43.0	43.5	44.9	44.2	74.9	76.7	75.8	86.7	92.3	89.9	40.7	44.1	42.4
14	43.2	45.5	44.3	44.5	46.5	45.5	72.0	76.6	73.3	82.4	86.4	83.9	42.2	45.1	43.6
15	44.8	45.5	45.1	46.0	48.3	46.9	71.0	76.4	73.0	83.0	92.3	86.1	43.0	46.5	44.6
16	45.0	47.1	45.9	48.4	49.7	48.7	76.5	80.5	78.5	92.5	95.9	94.4	45.0	47.5	46.1
17	47.1	49.7	48.1	49.0	50.5	49.7	77.7	80.4	79.1	93.0	96.0	94.5	46.5	49.2	47.4
18	47.5	50.5	49.0	47.5	49.8	48.7	77.9	80.2	78.9	92.5	96.4	95.6	47.5	50.7	48.7
19	47.0	49.7	48.1	47.6	49.6	48.7	76.7	81.2	79.2	88.0	94.4	92.6	47.7	50.7	48.8
20	47.5	49.0	47.9	48.1	49.5	48.6	78.5	85.7	82.4	90.6	96.6	94.2	44.5	51.4	48.6
21	49.0	50.1	49.7	49.0	50.1	49.6	80.2	85.3	81.9	88.6	93.0	90.5	48.2	50.8	49.5
22	50.5	53.0	52.0	50.0	53.0	51.5	81.0	84.9	83.0	88.5	95.3	91.8	49.8	53.5	51.2
23	52.5	54.9	53.9	53.0	55.2	53.9	81.9	87.5	84.9	92.5	100.5	97.4	52.0	56.1	53.2
24	52.9	54.6	54.0	55.1	56.2	55.5	86.2	87.5	86.9	97.5	100.3	99.2	53.4	57.4	55.2
25	9999	9999	9999	54.6	56.6	55.8	82.9	89.1	87.3	95.0	100.0	98.6	54.1	56.0	55.0
26	9999	9999	9999	54.6	56.2	55.4	79.5	82.6	80.6	86.5	95.1	93.1	54.0	56.0	54.8
27	9999	9999	9999	52.0	55.4	54.0	68.0	80.0	74.4	70.0	87.5	81.2	52.0	55.5	53.8
28	9999	9999	9999	51.4	55.7	53.2	65.0	76.5	71.5	69.2	95.4	90.0	51.0	53.3	52.0
29	9999	9999	9999	50.0	55.4	53.4	73.0	76.5	74.8	65.5	96.1	86.9	50.6	52.8	51.6
30	9999	9999	9999	48.5	50.0	49.0	64.5	72.0	67.4	64.8	84.0	72.7	49.0	50.9	49.7

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9999 OR 9999 -- INSTRUMENT MALFUNCTION



TABLE 4. SUMMARY OF DAILY MINIMUM, MAXIMUM, AND MEAN WATER TEMPERATURES (F), QUAD-CITIES STATION, MAY, 1979.

DAY	UPSTREAM			INTAKE			COOLING CANAL, COLD END			DISCHARGE			DOWNSTREAM		
	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN
1	99999	99999	99999	48.9	49.9	49.4	72.9	76.9	74.8	84.9	90.5	87.2	49.5	51.6	50.3
2	99999	99999	99999	48.8	50.1	49.7	76.7	80.5	78.8	90.5	92.3	91.5	49.8	52.2	51.0
3	99999	99999	99999	49.0	51.7	50.5	76.1	80.2	78.5	90.5	94.8	92.7	50.0	52.3	50.9
4	99999	99999	99999	50.8	52.0	51.6	78.5	83.0	80.7	88.5	96.6	94.0	50.5	53.5	51.3
5	99999	99999	99999	51.5	53.5	52.5	77.1	81.8	79.1	85.2	94.4	89.8	51.5	53.5	52.1
6	99999	99999	99999	53.3	55.6	54.4	81.5	83.4	82.3	92.0	97.3	94.9	51.8	55.0	52.8
7	52.5	56.1	54.7	55.3	58.7	57.6	81.6	84.5	83.2	94.0	100.5	98.5	52.0	57.6	55.9
8	57.7	58.8	58.4	59.0	62.0	60.5	75.9	85.0	82.1	83.4	100.7	91.7	57.5	60.6	58.7
9	61.2	62.8	62.0	61.1	63.3	62.1	74.7	88.0	83.0	84.6	100.3	94.7	59.6	62.0	60.8
10	99999	99999	99999	63.3	65.0	64.0	65.5	88.5	86.9	100.3	105.3	103.3	59.7	64.0	61.8
11	62.1	63.1	62.5	61.3	64.6	63.0	70.9	87.1	76.4	76.6	98.5	83.3	59.2	64.0	62.4
12	99999	99999	99999	59.5	62.5	61.0	66.5	78.9	72.6	75.9	96.9	88.6	60.0	63.2	61.9
13	99999	99999	99999	60.7	61.6	61.1	68.6	79.0	70.9	67.5	78.5	73.3	60.3	63.4	61.5
14	99999	99999	99999	59.9	61.0	60.7	71.0	79.0	74.0	76.9	95.5	84.8	60.0	62.9	61.4
15	99999	99999	99999	59.1	61.0	60.1	77.0	82.4	79.3	85.9	98.0	93.0	59.2	62.5	60.9
16	99999	99999	99999	60.9	62.3	61.6	78.5	85.0	82.4	95.6	107.0	100.4	59.4	62.5	61.3
17	99999	99999	99999	61.7	63.2	62.5	79.1	84.5	81.4	93.4	100.5	95.3	61.1	64.2	62.7
18	65.1	66.5	65.8	63.5	65.5	64.4	83.6	88.0	85.6	99.9	106.5	103.6	63.0	66.0	63.7
19	64.5	66.7	65.4	65.5	67.3	66.3	84.0	85.9	85.0	103.6	106.4	105.0	63.1	67.0	64.5
20	64.5	65.8	65.2	67.0	68.1	67.4	80.0	84.5	82.5	99999	99999	99999	63.4	67.3	65.2
21	62.9	65.8	64.1	66.0	67.3	66.4	79.3	83.8	81.7	99999	99999	99999	63.0	67.3	64.8
22	64.6	66.0	65.3	65.3	66.2	65.8	79.5	84.4	82.2	99999	99999	99999	62.7	66.5	64.7
23	62.0	66.0	63.5	62.4	66.0	64.4	79.0	84.1	81.5	99999	99999	99999	62.5	66.1	64.2
24	60.0	62.0	60.9	61.0	62.2	61.3	68.7	80.6	77.5	99999	99999	99999	60.5	63.6	61.6
25	58.7	60.6	59.6	60.7	62.0	61.4	63.3	69.0	66.1	99999	99999	99999	59.0	62.0	60.6
26	58.0	61.3	59.4	60.2	62.5	61.6	67.4	73.0	69.1	99999	99999	99999	58.3	62.4	60.4
27	57.0	61.6	58.6	59.1	62.5	60.5	66.3	71.3	68.7	99999	99999	99999	59.0	62.5	60.3
28	61.0	63.0	61.8	62.6	65.2	64.0	71.0	82.0	76.9	99999	99999	99999	61.3	64.1	62.4
29	61.3	63.4	62.4	65.0	65.5	65.7	79.6	85.5	82.6	99999	99999	99999	61.6	65.0	63.7
30	62.8	65.6	64.0	65.0	67.6	67.8	83.6	89.7	86.6	99999	99999	99999	64.0	67.5	65.3
31	65.0	68.9	67.9	68.5	70.0	69.7	85.5	88.6	87.0	99999	99999	99999	65.7	68.4	67.0

99999 OR 9999 -- INSTRUMENT MALFUNCTION

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TABLE 5. SUMMARY OF DAILY MINIMUM, MAXIMUM, AND MEAN WATER TEMPERATURES (F), QUAD-CITIES STATION, JUNE, 1979.

DAY	UPSTREAM			INTAKE			COOLING CANAL COLD END			DISCHARGE			DOWNSTREAM		
	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN
1	67.2	69.0	69.1	69.5	69.6	69.2	82.2	86.5	84.8	9999	9999	9999	55.7	59.4	57.8
2	69.3	70.8	69.9	69.3	71.3	70.2	84.6	88.5	86.5	9999	9999	9999	67.7	70.4	68.9
3	70.0	71.6	70.3	70.6	73.0	71.8	84.9	89.5	87.2	9999	9999	9999	63.5	71.0	69.7
4	70.1	71.6	70.8	71.8	72.9	72.4	86.1	89.0	87.4	9999	9999	9999	68.5	71.5	70.0
5	70.0	71.1	70.3	72.0	73.5	72.6	88.0	90.3	89.0	9999	9999	9999	69.5	71.0	70.3
6	69.0	70.7	69.7	71.4	72.5	72.0	85.5	92.5	89.0	9999	9999	9999	69.6	70.8	70.2
7	70.8	72.0	71.6	71.0	72.3	72.0	89.6	92.6	91.3	9999	9999	9999	70.0	72.2	71.5
8	72.2	73.5	72.7	72.3	73.5	72.8	82.2	92.5	88.8	9999	9999	9999	71.7	73.7	72.9
9	71.2	73.0	72.4	71.5	73.5	72.3	83.4	87.3	85.6	9999	9999	9999	71.0	74.5	73.2
10	70.8	72.6	71.7	68.4	72.4	71.0	77.8	87.5	81.8	9999	9999	9999	70.0	74.7	72.5
11	69.1	70.9	70.1	66.2	68.2	67.3	79.3	85.0	82.1	9999	9999	9999	69.0	72.6	71.0
12	70.1	71.6	71.0	68.0	71.5	70.1	77.9	81.0	79.4	9999	9999	9999	70.7	73.2	72.4
13	71.6	73.0	72.4	70.5	73.8	71.6	76.2	81.4	79.0	9999	9999	9999	72.0	73.5	72.6
14	69.8	74.5	73.0	71.0	73.6	72.4	77.0	83.5	80.3	9999	9999	9999	71.6	73.5	72.8
15	74.1	76.4	75.3	72.3	75.5	73.3	75.4	89.7	83.8	9999	9999	9999	72.5	75.1	73.6
16	76.0	77.9	77.1	74.0	77.1	75.6	88.1	92.0	89.9	9999	9999	9999	73.1	76.3	74.8
17	76.5	78.5	77.7	75.3	77.5	75.1	87.1	91.6	89.2	9999	9999	9999	73.5	76.8	75.1
18	73.1	77.0	75.4	71.4	75.2	73.7	84.4	86.5	85.6	9999	9999	9999	72.5	76.5	74.3
19	72.1	74.5	73.4	69.5	73.1	71.4	84.5	92.2	87.9	9999	9999	9999	71.5	74.0	73.0
20	72.9	74.6	73.9	72.4	74.4	73.4	89.6	91.8	90.7	9999	9999	9999	73.0	75.0	74.3
21	72.9	74.5	73.5	72.1	74.5	73.2	89.5	92.8	90.7	9999	9999	9999	73.0	75.7	74.3
22	73.8	75.1	74.5	73.5	76.0	74.6	84.3	92.6	89.9	9999	9999	9999	74.0	76.0	74.9
23	70.6	74.5	73.1	71.5	74.1	73.2	78.5	84.1	81.2	9999	9999	9999	71.5	75.6	74.0
24	70.3	71.6	70.9	70.7	72.5	71.5	30.0	86.8	83.4	9999	9999	9999	70.5	74.9	72.5
25	71.9	72.5	72.2	71.3	73.4	72.2	83.2	89.0	86.4	9999	9999	9999	71.0	75.6	73.4
26	72.4	73.9	73.0	71.1	73.9	72.7	86.5	91.0	89.0	9999	9999	9999	71.4	74.5	72.6
27	72.9	74.0	73.6	72.9	73.5	73.2	89.4	92.6	91.2	101.9	107.4	104.6	71.8	74.9	72.5
28	72.7	74.5	73.8	72.9	75.3	74.0	91.0	93.4	92.1	100.4	109.5	102.9	72.0	74.5	73.2
29	72.9	75.0	74.0	73.5	75.0	74.4	88.0	91.3	89.5	97.5	102.6	100.2	72.4	74.6	73.3
30	72.0	73.9	73.1	72.5	74.7	73.7	88.0	90.2	89.2	93.5	102.6	98.9	72.0	73.9	72.8

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 \*9999 OR 9999 -- INSTRUMENT MALFUNCTION

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TABLE 6. SUMMARY OF DAILY MINIMUM, MAXIMUM, AND MEAN WATER TEMPERATURES (F), QUAD-CITIES STATION, JULY, 1979.

DAY	UPSTREAM			INTAKE			SOUTH INTAKE			DISCHARGE			DOWNSTREAM		
	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN
1	74.0	75.7	75.0	73.9	75.9	74.8	87.2	90.5	89.1	96.2	105.2	101.3	73.6	74.9	74.3
2	75.4	77.4	76.5	74.8	77.8	76.1	87.9	92.8	90.2	103.8	112.0	107.5	74.7	78.9	76.4
3	76.1	77.0	76.6	75.7	77.0	76.2	89.8	94.2	91.3	105.7	111.5	108.9	74.5	78.0	76.1
4	*9999	*3339	*9999	74.9	76.8	75.7	86.6	92.6	89.0	101.2	109.4	103.5	74.4	75.3	74.9
5	74.6	75.9	75.5	73.2	75.0	74.3	85.0	89.6	87.0	101.1	105.0	103.6	74.1	74.9	74.5
6	75.9	76.5	76.3	72.9	74.3	73.6	87.0	90.6	88.7	101.3	105.5	103.7	74.7	75.3	75.1
7	76.5	76.9	76.6	73.1	74.8	73.9	88.7	91.0	89.9	103.0	106.9	105.0	75.1	75.6	75.3
8	76.5	77.0	76.5	73.1	75.5	74.6	88.7	93.0	90.8	99.0	109.1	105.5	75.5	76.1	75.8
9	76.5	77.5	76.9	74.6	77.2	75.9	91.5	94.9	93.3	107.3	112.2	109.7	76.1	77.6	76.7
10	76.9	77.1	77.0	76.4	77.2	76.8	92.2	94.5	93.6	109.5	110.9	110.1	76.9	77.5	77.2
11	77.0	77.3	77.1	77.3	78.4	78.1	94.4	95.8	95.2	109.6	111.5	110.8	77.5	78.3	77.8
12	78.3	79.0	78.5	77.8	78.3	78.4	93.8	95.7	95.1	110.0	112.7	111.2	78.0	79.9	78.7
13	79.2	80.4	79.9	77.5	79.6	78.4	91.6	95.2	94.0	108.5	112.4	110.0	77.5	79.9	78.9
14	76.7	79.5	77.9	77.3	78.5	77.8	91.4	96.5	93.7	105.4	114.0	109.1	76.8	78.7	77.5
15	77.9	79.0	78.4	77.5	79.3	78.3	93.7	96.5	95.2	109.0	115.0	112.0	77.6	78.9	78.4
16	78.2	78.8	78.6	78.2	79.6	78.8	92.7	95.5	93.7	108.7	115.0	110.6	78.2	79.3	78.9
17	77.8	78.5	78.1	77.5	78.9	78.2	89.8	92.7	91.3	105.2	109.0	107.7	78.0	79.9	78.9
18	77.9	79.0	78.2	77.0	79.1	77.9	90.0	92.2	91.4	105.5	109.5	107.7	78.0	79.5	78.8
19	78.2	79.0	78.6	77.5	80.0	78.7	91.0	93.2	92.2	106.5	116.5	109.4	78.4	80.4	79.3
20	78.0	78.8	78.3	77.5	80.5	78.9	90.0	94.4	92.6	105.6	112.2	109.5	78.5	80.0	79.1
21	78.0	79.1	78.4	78.0	80.6	79.3	87.4	93.4	90.4	90.7	109.0	97.9	78.6	80.6	79.5
22	78.1	79.5	78.5	78.5	80.6	79.4	89.6	94.0	91.6	97.7	108.0	103.4	78.9	81.3	79.8
23	78.6	79.5	79.1	78.0	80.6	79.3	92.5	96.0	94.2	107.0	110.5	108.7	78.3	80.6	79.7
24	78.5	80.0	79.3	78.9	81.9	79.9	89.5	97.0	94.1	88.8	107.9	99.2	77.4	80.6	79.4
25	79.1	79.6	79.4	79.0	80.4	79.5	87.6	96.0	91.1	84.2	109.5	99.3	78.7	80.9	79.5
26	78.8	79.8	79.4	78.3	80.5	79.3	93.9	96.1	95.2	106.5	117.5	109.4	78.4	80.5	79.5
27	79.2	80.0	79.5	79.6	80.5	80.1	93.0	96.0	94.7	104.3	110.8	105.5	76.5	80.9	79.5
28	*9999	*9999	*9999	79.0	81.5	80.0	90.5	96.3	93.9	*9999	*9999	*9999	76.8	81.0	79.3
29	*9999	*9999	*9999	79.3	81.3	80.2	92.0	96.7	94.4	*9999	*9999	*9999	77.2	81.3	79.5
30	78.0	78.5	78.2	78.8	80.3	79.7	92.8	97.1	95.3	109.0	111.6	110.9	77.0	82.6	79.6
31	78.3	81.9	80.0	78.0	80.5	79.2	92.1	97.2	94.5	97.5	110.7	105.1	78.6	82.1	80.3

\*9999 OR 9999 -- INSTRUMENT MALFUNCTION

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HAZLETON ENVIRONMENTAL SCIENCES

APPENDIX B

(Related to Chapter 2 of Text)

SUMMARY OF DAILY TEMPERATURE DIFFERENCES

QUAD-CITIES STATION

February 1979 through July 1979

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HAZLETON ENVIRONMENTAL SCIENCES

TABLE 1. SUMMARY OF TEMPERATURE DIFFERENTIALS ( $\Delta$ ), QUAD-CITIES STATION, FEBRUARY 1979.

POOR ORIGINAL

DAY	TEMPERATURES (F)			
	DISCHARGE		DOWNSTREAM	
	MINUS INTAKE MAX.	MEAN	MINUS UPSTREAM MAX.	MEAN
1	49.1	35.6	0.7	0.0
2	38.0	26.4	0.3	0.0
3	25.7	21.7	0.0	0.0
4	43.2	23.8	0.2	0.0
5	44.3	43.5	0.0	0.0
6	44.5	42.1	0.0	-0.0
7	55.4	50.9	0.0	-0.0
8	52.4	50.6	0.0	-0.0
9	51.5	46.9	0.7	0.0
10	*9999	*9999	0.0	-0.0
11	*9999	*9999	0.0	0.0
12	41.2	37.7	0.3	0.0
13	55.5	43.2	0.9	0.1
14	64.0	59.6	1.4	0.4
15	66.7	62.3	1.2	0.3
16	48.7	44.6	0.2	-0.0
17	47.1	42.6	0.0	-0.0
18	41.7	30.8	0.1	-0.0
19	36.6	28.7	0.0	-0.1
20	46.5	40.0	0.5	-0.0
21	56.6	49.7	0.6	-0.0
22	57.9	50.1	1.0	0.2
23	57.0	50.8	1.0	0.0
24	56.5	53.0	1.2	0.0
25	54.4	49.9	0.9	-0.0
26	63.5	60.1	0.5	-0.2
27	61.5	57.0	0.8	-0.2
28	68.0	50.1	1.7	0.2

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 \*9999 OR 9999 -- INSTRUMENT MALFUNCTION

HAZLETON ENVIRONMENTAL SCIENCES

TABLE 2. SUMMARY OF TEMPERATURE DIFFERENTIALS ( $\Delta$ ), QUAD-CITIES STATION, MARCH 1979.

POOR ORIGINAL

DAY	TEMPERATURES (F)			
	DISCHARGE		DOWNSTREAM	
	MINUS INTAKE	MEAN	MINUS UPSTREAM	MEAN
1	39.8	35.1	1.5	0.4
2	41.4	37.5	0.8	0.2
3	63.0	56.2	0.4	-0.0
4	62.6	51.3	1.2	0.2
5	65.2	58.8	1.0	0.0
6	66.4	62.5	0.9	0.1
7	56.0	45.6	1.1	0.0
8	59.1	51.5	0.7	-0.1
9	65.2	61.1	0.2	-0.2
10	*9999	*9999	0.6	-0.1
11	*9999	*9999	0.8	-0.2
12	*9999	*9999	0.5	-0.2
13	59.8	54.9	0.0	-0.4
14	52.7	49.8	0.4	0.0
15	*9999	*9999	0.5	0.0
16	*9999	*9999	1.2	0.2
17	*9999	*9999	1.2	0.2
18	*9999	*9999	0.3	0.3
19	*9999	*9999	1.8	0.5
20	*9999	*9999	1.7	0.4
21	*9999	*9999	0.6	0.0
22	*9999	*9999	0.2	-0.0
23	*9999	*9999	1.0	0.0
24	*9999	*9999	1.6	0.7
25	*9999	*9999	1.4	0.5
26	*9999	*9999	1.0	0.2
27	45.6	42.8	1.1	0.2
28	55.1	48.1	1.0	-0.1
29	55.4	54.1	1.5	-0.1
30	54.6	51.5	1.2	-1.5
31	50.5	48.5	0.2	-1.6

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 \*9999 OR 9999 -- INSTRUMENT MALFUNCTION

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HAZLETON ENVIRONMENTAL SCIENCES

TABLE 3. SUMMARY OF TEMPERATURE DIFFERENTIALS ( $\Delta$ ), QUAD-CITIES STATION, APRIL 1979.

POOR ORIGINAL

DAY	TEMPERATURES (F)			
	DISCHARGE		DOWNSTREAM	
	MINUS INTAKE	MEAN	MINUS UPSTREAM	MEAN
1	43.6	42.3	0.9	-0.2
2	48.0	47.4	1.0	-0.1
3	51.7	49.1	1.3	-0.0
4	49.6	47.7	1.1	-0.2
5	49.5	44.6	3.5	2.1
6	49.3	44.0	3.9	2.2
7	48.3	38.7	2.7	1.2
8	46.4	41.3	1.8	0.4
9	48.5	46.9	*9999	*9999
10	47.6	46.1	*9999	*9999
11	45.2	45.3	*9999	*9999
12	50.0	48.0	2.5	0.4
13	47.6	45.7	1.0	-0.6
14	41.6	38.5	0.8	-0.7
15	44.1	39.5	1.1	-0.5
16	47.4	45.7	0.9	-0.1
17	46.6	44.9	0.6	-0.7
18	48.0	46.9	1.4	-0.3
19	45.7	43.9	2.5	0.7
20	47.6	45.6	1.5	0.6
21	43.0	40.7	1.5	-0.2
22	42.6	40.5	1.4	-0.5
23	45.7	43.5	1.9	-0.7
24	45.0	43.6	3.7	1.2
25	45.8	42.8	*9999	*9999
26	39.5	37.7	*9999	*9999
27	33.0	27.2	*9999	*9999
28	41.7	36.5	*9999	*9999
29	42.0	33.5	*9999	*9999
30	35.5	23.7	*9999	*9999

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 \*9999 OR 9999 -- INSTRUMENT MALFUNCTION

HAZLETON ENVIRONMENTAL SCIENCES

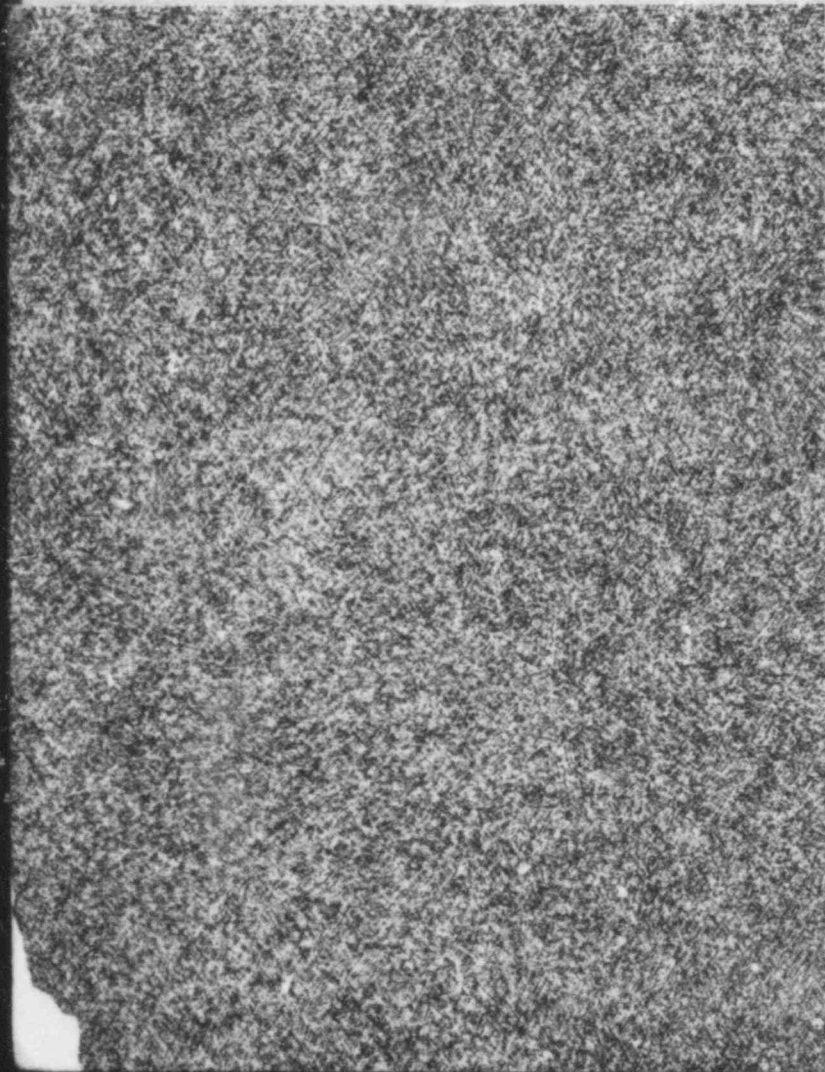
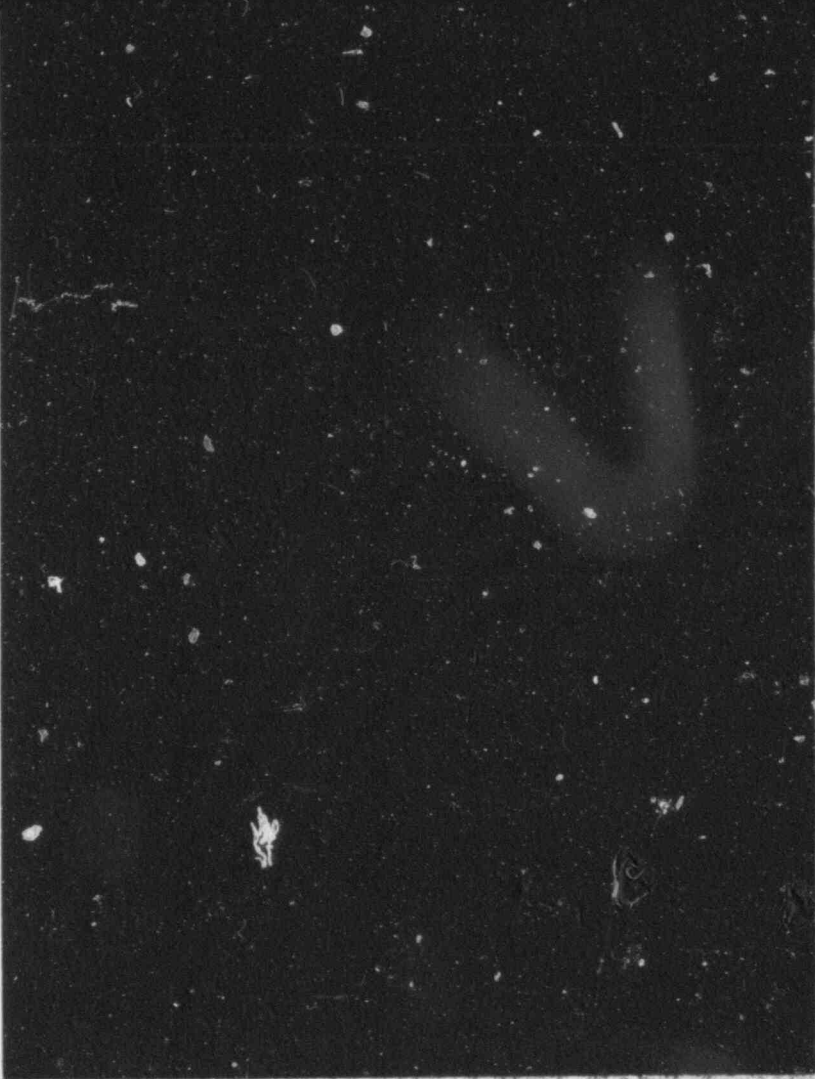
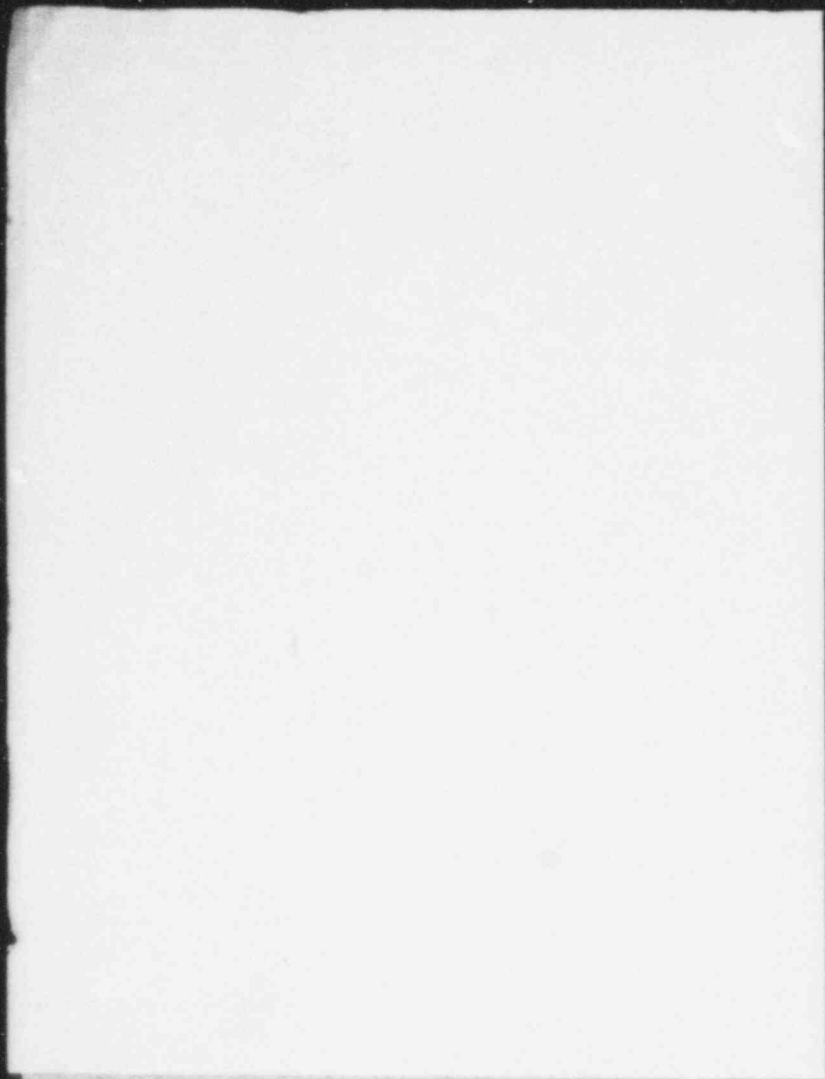
TABLE 4. SUMMARY OF TEMPERATURE DIFFERENTIALS ( $\Delta$ ), QUAD-CITIES STATION, MAY 1979.

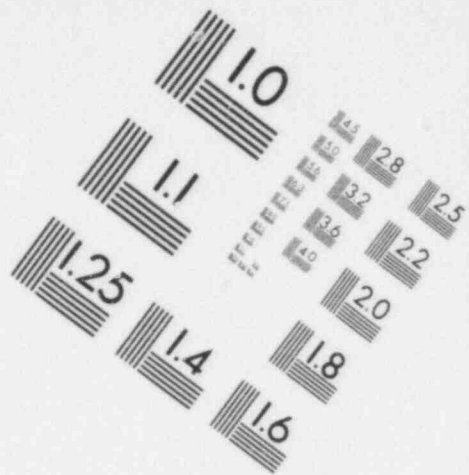
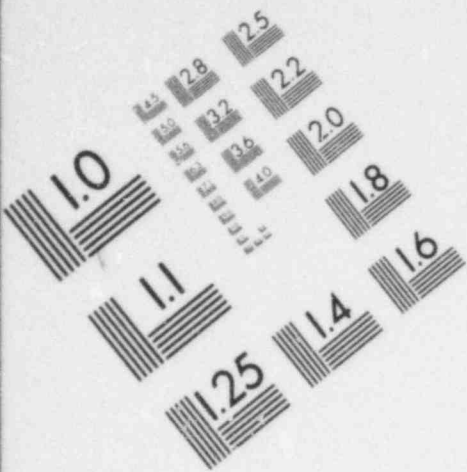
POOR ORIGINAL

DAY	TEMPERATURES (F)			
	DISCHARGE		DOWNSTREAM	
	MINJS INTAKE	MEAN	MINJS UPSTREAM	MEAN
1	40.7	37.8	*9999	*9999
2	42.8	41.7	*9999	*9999
3	44.1	42.3	*9999	*9999
4	44.9	42.4	*9999	*9999
5	40.9	37.3	*9999	*9999
6	42.2	40.4	*9999	*9999
7	42.0	40.9	2.6	0.8
8	41.6	31.2	0.1	-0.6
9	39.1	33.5	-0.9	-1.3
10	40.5	38.6	*9999	*9999
11	35.1	20.3	1.2	0.2
12	35.7	27.6	*9999	*9999
13	17.8	12.2	*9999	*9999
14	35.0	24.2	*9999	*9999
15	38.8	32.9	*9999	*9999
16	44.7	38.8	*9999	*9999
17	37.4	33.5	*9999	*9999
18	41.5	29.2	-0.2	-1.7
19	40.5	39.2	2.5	-0.9
20	*9999	*9999	2.0	-0.0
21	*9999	*9999	2.3	0.7
22	*9999	*9999	0.7	-0.6
23	*9999	*9999	1.5	0.7
24	*9999	*9999	1.9	0.5
25	*9999	*9999	2.3	1.1
26	*9999	*9999	2.5	1.0
27	*9999	*9999	3.4	1.7
28	*9999	*9999	1.7	0.6
29	*9999	*9999	3.0	1.3
30	*9999	*9999	2.9	1.3
31	*9999	*9999	2.7	-0.9

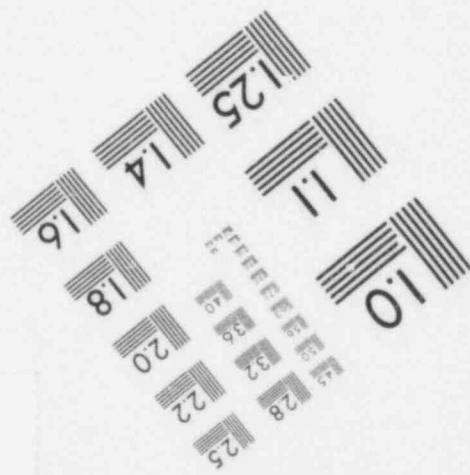
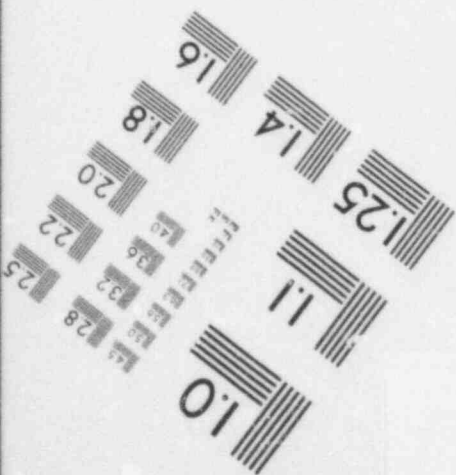
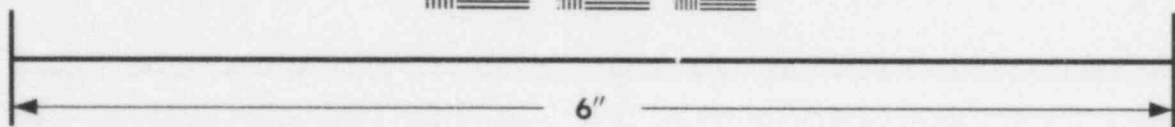
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 \*9999 OR 9999 -- INSTRUMENT MALFUNCTION

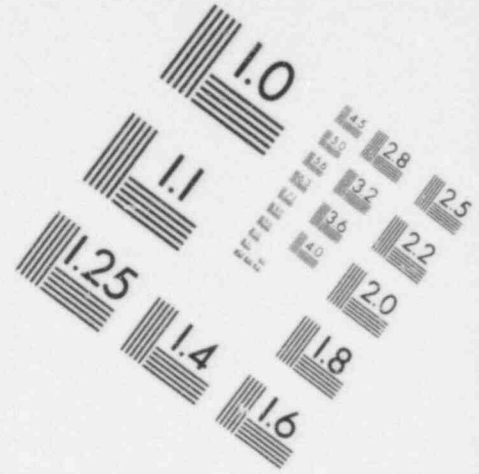
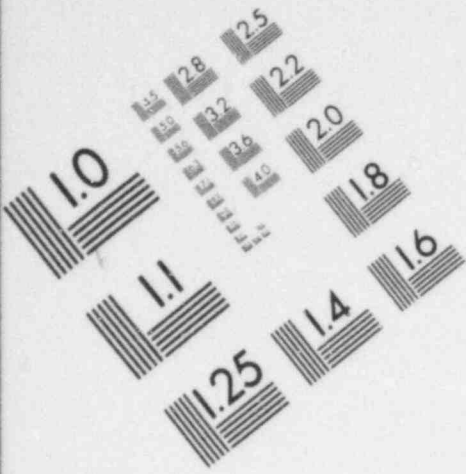




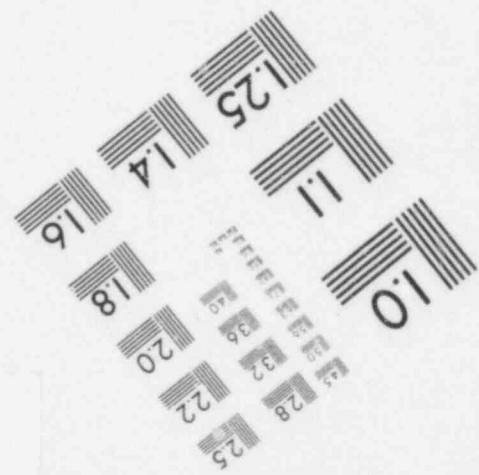
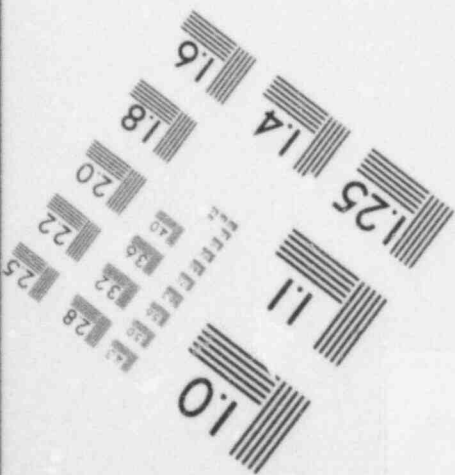
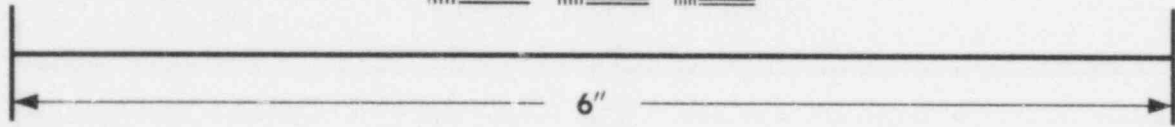


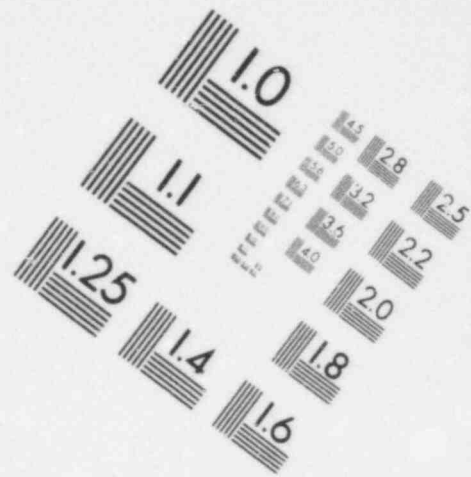
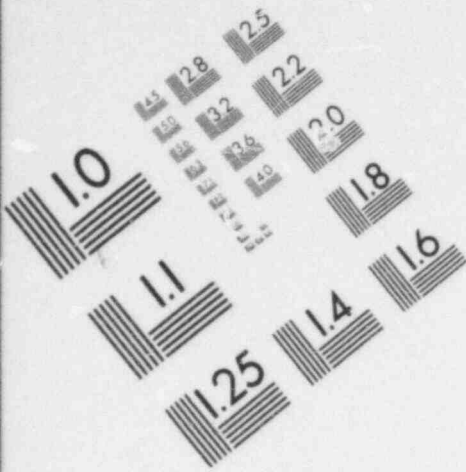
**IMAGE EVALUATION  
TEST TARGET (MT-3)**



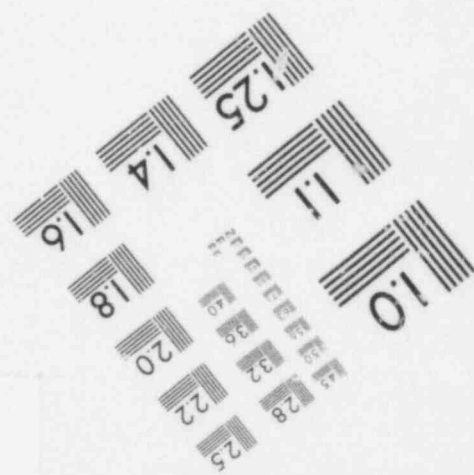
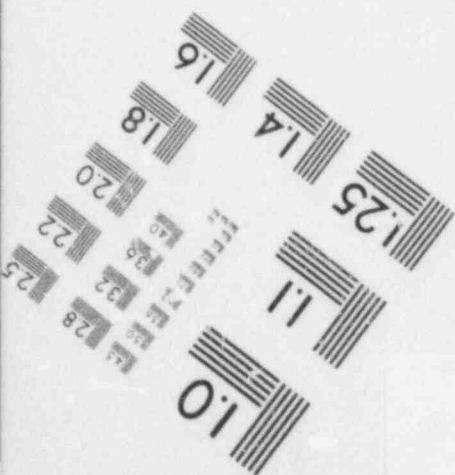
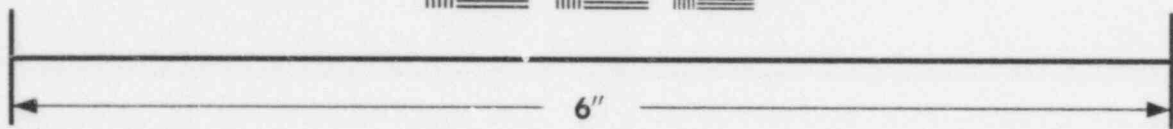
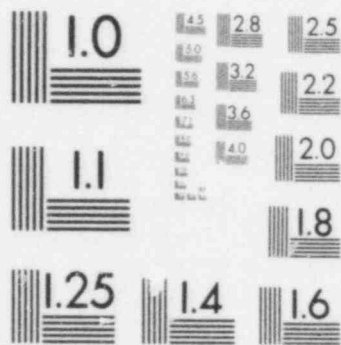


**IMAGE EVALUATION  
TEST TARGET (MT-3)**





**IMAGE EVALUATION  
TEST TARGET (MT-3)**



HAZLETON ENVIRONMENTAL SCIENCES

TABLE 5. SUMMARY OF TEMPERATURE DIFFERENTIALS ( $\Delta$ ), QUAD-CITIES STATION, JUNE 1979.

POOR ORIGINAL

DAY	TEMPERATURES (F)			
	DISCHARGE		DOWNSTREAM	
	MINUS INTAKE	MEAN	MINUS POSTREAM	MEAN
1	*9999	*9999	0.8	-0.2
2	*9999	*9999	0.4	-1.0
3	*9999	*9999	0.1	-1.1
4	*9999	*9999	0.5	-0.8
5	*9999	*9999	0.9	0.0
6	*9999	*9999	1.5	0.5
7	*9999	*9999	0.6	-0.0
8	*9999	*9999	1.4	0.1
9	*9999	*9999	2.6	0.8
10	*9999	*9999	2.0	0.6
11	*9999	*9999	3.2	0.9
12	*9999	*9999	2.4	1.4
13	*9999	*9999	1.6	0.2
14	*9999	*9999	3.7	-0.2
15	*9999	*9999	-0.3	-1.7
16	*9999	*9999	-0.5	-2.3
17	*9999	*9999	-1.1	-2.6
18	*9999	*9999	0.3	-1.3
19	*9999	*9999	1.5	-0.4
20	*9999	*9999	1.7	0.3
21	*9999	*9999	1.3	0.8
22	*9999	*9999	2.2	0.3
23	*9999	*9999	4.3	1.0
24	*9999	*9999	4.3	1.6
25	*9999	*9999	3.4	1.3
26	*9999	*9999	1.9	-0.4
27	34.0	21.3	1.3	-1.1
28	34.8	28.9	1.3	-0.5
29	27.6	25.7	1.0	-0.7
30	28.3	25.2	0.7	-0.3

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 \*9999 OR 9999 -- INSTRUMENT MALFUNCTION

1079 001

POOR ORIGINAL

TABLE 6. SUMMARY OF TEMPERATURE DIFFERENTIALS ( $\Delta$ ), QUAD-CITIES STATION, JULY 1979.

DAY	TEMPERATURES (F)			
	DISCHARGE		DOWNSTREAM	
	MINUS INTAKE	MEAN	MINUS UPSTREAM	MEAN
1	30.4	26.5	0.4	-0.6
2	34.4	31.4	1.8	-0.2
3	35.3	32.7	1.0	0.1
4	33.9	27.9	*9999	*9999
5	31.3	29.3	-0.2	-0.9
6	31.9	30.2	-0.9	-1.2
7	32.2	31.2	-1.2	-1.3
8	34.1	30.9	-0.5	-0.8
9	35.4	33.8	1.1	-0.2
10	34.0	33.3	0.6	0.2
11	33.4	32.7	0.5	0.4
12	34.2	32.9	0.4	-0.2
13	32.8	31.6	0.0	-1.4
14	36.4	31.3	0.2	-0.4
15	36.1	33.7	0.2	-0.1
16	36.6	31.9	0.7	0.4
17	31.0	29.4	1.9	0.8
18	31.0	29.3	1.5	0.6
19	36.5	30.6	1.9	0.7
20	32.7	30.6	1.5	0.7
21	30.4	18.6	2.3	1.0
22	28.4	24.0	2.6	1.1
23	31.0	29.4	1.7	0.7
24	28.7	19.3	1.9	0.1
25	29.9	19.7	1.4	0.2
26	38.8	30.2	1.4	0.0
27	30.7	26.5	0.9	0.2
28	*9999	*9999	*9999	*9999
29	*9999	*9999	*9999	*9999
30	32.8	31.1	4.5	2.2
31	31.5	26.9	3.6	0.4

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 \*9999 OR 9999 -- INSTRUMENT MALFUNCTION

APPENDIX C

(Related to Chapter 2 of Text)

WEEKLY TEMPERATURE IN THE  
WAPSIPINICON AND MISSISSIPPI RIVERS

QUAD-CITIES STATION

February 1979 through July 1979

1079 003

HAZLETON ENVIRONMENTAL SCIENCES

Table 1. Temperatures in the Wapsipinicon River and Mississippi River (upstream, mid-channel) February through July 1979.

Month and Year	Date	Temperatures (°F)	
		Wapsipinicon River	Mississippi River
February 1979	February 1	32.0	32.0
	21	32.0	32.0
	28	32.0	32.0
March 1979	March 7	32.0	32.0
	14	32.0	32.0
	27	34.9	32.7
April 1979	April 4	38.7	35.8
	11	38.8	37.6
	20	48.2	47.3
	27	54.0	53.6
May 1979	May 4	50.9	50.2
	11	62.4	62.1
	17	64.2	61.7
	24	61.2	61.0
June 1979	June 1	68.5	67.1
	8	75.2	72.3
	13	73.2	71.4
	20	74.3	73.8
	27	74.5	72.3
July 1979	July 2	76.1	75.9
	5 <sup>a</sup>	72.7 (73.9)	74.3 (73.6)
	12	76.1	77.9
	17	76.6	78.8
	23	79.9	79.9
	27	80.1	80.1
	30	79.2	77.9

<sup>a</sup>Temperatures taken twice on July 5.

1079 004



APPENDIX D

(Related to Chapter 2 of Report)

CHRONOLOGY OF CHANGES IN  
STATION OPERATING CONDITIONS

QUAD-CITIES STATION

February 1979 through July 1979

1079 005

## HAZLETON ENVIRONMENTAL SCIENCES

Table 1. Chronology of changes in station operating conditions, February through July 1979. Operating conditions from a date and time listed were fixed until the next change

Month	Date Day	Time (hour)	Lift Pumps Operating (number)	Circulating Water Pumps Operating (number)	Mode of Station Operation (condenser) cooling			
February	1	1200	3	4	Closed cycle			
		1240	3	4	Combination cycle: spray canal and north diffuser pipe			
		1300	3	5				
		1330	3	5	Combination cycle: spray canal and north and south diffuser pipes			
		2300	0	5	Open cycle: north and south diffuser pipes			
	4	1500	1500	0	5	Open cycle: south diffuser pipe partially open		
			1833	0	4			
			1850	0	3			
			1942	0	4			
			2115	0	3			
			2130	0	3	Closed cycle: both diffuser pipes closed		
			2132	0	3	Open cycle: south diffuser		
			2150	0	2			
			5	1500	1500	0	2	Open cycle: north and south diffuser pipes
	6	1500	1500	1	2	Combination cycle: spray canal and diffuser pipe with south diffuser partially open		
	7		1420	2	2			
			1440	1	2			
			1630	2	2			
			1712	1	2			
	8	1500	1500	1	3	Combination cycle: spray canal and north and south diffuser pipes		
10		0240	1	2				
		0748	1	0				
		0748	0	0	Open cycle: north and south diffuser pipes			
11		1820	0	3				
		2315	1	3	Combination cycle: spray canal and north and south diffuser pipes			
12		0200	1	3	Closed cycle			
		0205	0	3	Open cycle: north and south diffuser pipes			
		0235	1	3	Combination cycle: spray canal and north and south diffuser pipes			
		0435	0	3	Open cycle: north and south diffuser pipes			

## HAZLETON ENVIRONMENTAL SCIENCES

Table 1. Continued.

Month	Date Day	Time (hour)	Lift Pumps Operating (number)	Circulating Water Pumps Operating (number)	Mode of Station Operation (condenser) cooling
February (cont'd)		0550	1	3	Combination cycle: spray canal and north and south diffuser pipes
		0735	0	3	Open cycle: north and south diffuser pipes
		0925	1	3	Combination cycle: spray canal and north and south diffuser pipes
		1135	0	3	Open cycle: north and south diffuser pipes
		1450	1	3	Combination cycle: spray canal and north and south diffuser pipes
		1640	2	3	
		1707	1	3	
		2177	2	3	
	13	0700	2	3	Combination cycle: spray canal and north diffuser pipe
	14	0700	2	3	Closed cycle
	15	2140	2	4	
		2145	2	5	
		2230	2	4	
	16	0008	2	5	
	18	0700	3	5	
	21	0845	3	6	
		0945	3	5	
		1545	4	5	
		1710	3	5	
	26	1800	4	6	
		2350	4	6	Combination cycle: spray canal and south diffuser partially open
March	9	1627	5	6	Combination cycle: spray canal and south diffuser partially open
		1648	5	6	Closed cycle
	16	0900	4	6	
		0945	3	6	
		1010	2	6	
		1035	1	8	
		2300	1	6	Combination cycle: spray canal and north and south diffuser pipes
	17	0300	1	6	Combination cycle: spray canal and south diffuser pipe
		0310	2	6	
		0335	3	6	
	0420	4	6		

## HAZLETON ENVIRONMENTAL SCIENCES

Table 1. continued.

Month	Date Day	Time (hour)	Lift Pumps Operating (number)	Circulating Water Pumps Operating (number)	Mode of Station Operation (condenser) cooling
March	17	0455	5	6	Closed cycle
		0515	5	6	
	21	1625	3	6	Combination cycle: spray canal and north and south diffuser pipes
		1740	1	6	
		1821	1	6	
	22	1230	2	6	Combination cycle: spray canal and north diffuser pipe with south diffuser pipe partially open
		1310	3	6	
1320		4	6		
1600		4	6		
23	1805	3	6	Combination cycle: spray canal and north and south diffuser pipes	
April	20	2202	4	6	
		2204	3	6	
	28	0240	2	6	
		0245	2	3	
	29	1805	2	5	
1810		3	6		
May	8	1043	2	6	Combination cycle: spray canal and south diffuser pipe with north diffuser pipe partially open
		1057	1	6	
	9	0020	3	6	Combination cycle: spray canal and south diffuser pipe
	25	0725	2	3	
		0800	2	5	
		0808	2	6	
30	0935	3	6		
June	8	1010	3	6	Combination cycle: spray canal and south diffuser pipe with north diffuser pipe partially open
		1107	2	6	
	1140	2	6	Combination cycle: spray canal and north and south diffuser pipes	
	1215	1215	1	6	Combination cycle: spray canal and south diffuser pipe with north diffuser pipe partially open
		1813	1	6	
	11	1940	2	6	Combination cycle: spray canal and south diffuser pipe
		2025	3	6	
		0035	3	6	Combination cycle: spray canal and south diffuser pipe with north diffuser pipe partially open

## HAZLETON ENVIRONMENTAL SCIENCES

Table 1. Continued.

Month	Date Day	Time (hour)	Life Pumps Operating (number)	Circulating Water Pumps Operating (number)	Mode of Station Operation (condenser) cooling	
June	11	0150	2	6	Combination cycle: spray canal and north and south diffuser pipes	
		0205	2	6		
	15	0220	0220	1	6	Open cycle: north and south diffuser pipes
			0340	0	6	
		0110	0110	1	6	Combination cycle: spray canal and north and south diffuser pipes
			0145	1	6	Combination cycle: spray canal and south diffuser pipe with north diffuser pipe partially open
		0250	0250	2	6	Combination cycle: spray canal and south diffuser pipe
			0515	3	6	
			0523	3	6	
		July	24	0750	3	6
0825	2			6	Combination cycle: spray canal and north and south diffuser pipes.	
1020	1		6			
25	0720		0720	1	6	Combination cycle: spray canal and south diffuser pipe with north diffuser pipe partially open.
			0755	2	6	
	0905		1	6	Combination cycle: spray canal and south diffuser pipe	
	0930		3	6		
27	1410		1410	3	6	Combination cycle: spray canal and south diffuser pipe with north diffuser pipe partially open
			1420	0	6	Combination cycle: spray canal and north and south diffuser pipes
			1435	1	6	
	1525		1	6		
	1335		1335	0	6	Open cycle: north and south diffuser pipes
			2200	1	6	Combination cycle: spray canal and north and south diffuser pipes
			2210	1	6	Combination cycle: spray canal and south diffuser pipe with north diffuser pipe partially open.
	2321		2321	1	6	Combination cycle: spray canal and south diffuser pipe.
			2325	2	6	Combination cycle: spray canal and south diffuser pipe with north diffuser pipe partially open
2337	3		6			
31	0635	3	6			

## HAZLETON ENVIRONMENTAL SCIENCES

Table 1. Continued.

Month	Date Day	Time (hour)	Life Pumps Operating (number)	Circulating Water Pumps Operating (number)	Mode of Station Operation (condenser) cooling
July (cont.)	31	0710	2	6	
		0740	3	6	
		0910	3	6	Combination cycle: spray canal and south diffuser pipe
		1215	3	6	Combination cycle: spray canal and south diffuser pipe with north diffuser pipe partially open
		1310	2	6	
		1345	1	6	
		1415	0	6	Open cycle: north and south diffuser pipes
		1725	0	6	Open cycle: south diffuser pipe with north diffuser partially open
		1740	1	6	Combination cycle: spray canal and south diffuser pipe with north diffuser partially open
		1800	2	6	
		1825	2	6	Combination cycle: spray canal and south diffuser pipe
		1842	3	6	

APPENDIX E

(Related to Chapter 2 of Text)

DAILY MEGAWATT POWER OUTPUT  
(PERCENT OF CAPACITY)

QUAD-CITIES STATION

February 1979 through July 1979

HAZLETON ENVIRONMENTAL SCIENCES

Table 1. Daily megawatt power output (percent of capacity), Quad-Cities Station, February 1979.

Date	Unit 1	Unit 2	Station Average	Remarks
1	0	88	44	
2	0	87	44	
3	0	87	44	
4	0	87	44	
5	0	86	43	
6	0	86	43	
7	0	85	42	
8	0	85	42	
9	0	70	35	
10	0	0	0	
11	0	1	0	
12	0	66	33	
13	0	85	42	
14	0	88	44	
15	0	87	44	
16	0	97	48	
17	0	87	44	
18	0	63	32	
19	0	68	34	
20	0	77	38	
21	0	86	43	
22	0	94	47	
23	0	83	42	
24	0	96	48	
25	0	95	48	
26	0	97	48	
27	11	96	54	
28	0	97	48	



**HAZLETON ENVIRONMENTAL SCIENCES**

Table 2. Daily megawatt power output (percent of capacity), Quad-Cities Station, March 1979.

Date	Unit 1	Unit 2	Station Average	Remarks
1	0	96	48	
2	20	97	58	
3	47	95	71	
4	54	84	69	
5	69	96	82	
6	77	95	86	
7	36	94	65	
8	54	94	79	
9	82	89	86	
10	92	78	85	
11	66	83	74	
12	75	73	74	
13	89	67	78	
14	97	70	84	
15	97	72	84	
16	98	79	88	
17	95	72	84	
18	88	72	80	
19	83	67	75	
20	87	72	80	
21	88	68	78	
22	87	78	82	
23	81	74	78	
24	95	86	90	
25	83	46	64	
26	98	69	84	
27	98	78	88	
28	98	86	92	
29	98	94	96	
30	98	92	95	
31	98	92	95	

1079 013

HAZLETON ENVIRONMENTAL SCIENCES

Table 3. Daily megawatt power output (percent of capacity), Quad-Cities Station, April 1979.

Date	Unit 1	Unit 2	Station Average	Remarks
1	86	87	86	
2	98	87	92	
3	97	92	94	
4	96	90	93	
5	98	90	94	
6	98	88	93	
7	79	79	79	
8	86	87	86	
9	97	89	93	
10	95	88	92	
11	98	85	92	
12	98	86	92	
13	92	85	88	
14	75	78	76	
15	82	82	82	
16	93	86	90	
17	91	85	88	
18	87	84	86	
19	86	80	83	
20	86	77	82	
21	77	74	76	
22	79	76	78	
23	87	78	82	
24	87	79	83	
25	83	78	80	
26	90	69	80	
27	93	32	62	
28	94	0	47	
29	84	0	42	
30	93	21	57	

HAZLETON ENVIRONMENTAL SCIENCES

Table 4. Daily megawatt power output (percent of capacity), Quad-Cities Station, May 1979.

Date	Unit 1	Unit 2	Station Average	Remarks
1	96	60	78	
2	95	71	83	
3	96	79	88	
4	92	88	90	
5	73	92	82	
6	95	83	89	
7	94	85	90	
8	91	89	90	
9	92	88	90	
10	84	84	84	
11	4	85	44	
12	0	84	42	
13	0	70	35	
14	28	89	58	
15	50	89	70	
16	82	88	85	
17	70	88	79	
18	87	87	87	
19	95	86	90	
20	79	83	81	
21	89	87	88	
22	93	86	90	
23	97	85	91	
24	75	49	62	
25	0	62	31	
26	0	72	36	
27	6	80	43	
28	68	89	78	
29	88	90	89	
30	97	89	93	
31	97	78	88	

## HAZLETON ENVIRONMENTAL SCIENCES

Table 5. Daily megawatt power output (percent of capacity), Quad-Cities Station, June 1979.

Date	Unit 1	Unit 2	Station Average	Remarks
1	98	89	94	
2	95	88	92	
3	98	77	88	
4	98	88	93	
5	98	87	92	
6	97	87	92	
7	96	78	87	
8	98	76	87	
9	56	77	66	
10	85	77	81	
11	97	82	90	
12	98	87	92	
13	98	85	92	
14	97	84	90	
15	97	76	86	
16	97	79	88	
17	84	79	82	
18	97	83	90	
19	97	79	88	
20	96	84	90	
21	97	82	90	
22	97	48	72	
23	96	30	63	
24	89	78	84	
25	95	84	90	
26	96	81	88	
27	98	81	90	
28	98	78	88	
29	98	80	89	
30	96	79	88	

**HAZLETON ENVIRONMENTAL SCIENCES**

Table 6. Daily megawatt power output (percent of capacity), Quad-Cities Station, July 1979.

Date	Unit 1	Unit 2	Station Average	Remarks
1	89	80	84	
2	90	80	85	
3	98	79	88	
4	82	73	78	
5	97	78	88	
6	98	79	88	
7	98	78	88	
8	95	76	86	
9	98	78	88	
10	98	77	88	
11	98	77	88	
12	98	77	88	
13	98	76	87	
14	97	76	86	
15	98	75	86	
16	98	76	87	
17	98	75	86	
18	98	75	86	
19	98	75	86	
20	98	74	86	
21	53	74	64	
22	78	72	75	
23	96	74	85	
24	97	73	85	
25	98	69	84	
26	97	74	86	
27	88	73	80	
28	93	73	83	
29	97	64	80	
30	97	72	84	
31	98	71	84	

APPENDIX F

(Related to Chapter 2 of Text)

PERCENT RECOVERY OF TEMPERATURE DATA AND  
EXPLANATION OF DATA LOSSES

QUAD-CITIES STATION

February 1979 through July 1979

# HAZLETON ENVIRONMENTAL SCIENCES

Table 1. Percent recovery of temperature data from the continuous monitoring system at Quad-Cities Station, February - July 1979.

Month	Year	Percent Recovery Temperature Monitoring
February	1979	83
March	1979	75
April	1979	76
May	1979	70
June	1979	73
July	1979	70

**HAZLETON ENVIRONMENTAL SCIENCES**

Table . . Summary of temperature data loss at Quad-Cities Station, February through July 1979.

Month	Date and Time	Monitoring Location	Remarks
February	2/1/79 at 0100 hrs until 2/28/79 at 2400 hrs	Sensor D	Sensor malfunction
	2/2/79 at 0600 hrs until 2/2/79 at 1000 hrs	Upstream Intake Discharge Sensor A Sensor B Sensor C Cooling Canal	... jammed
	2/9/79 at 1500 hrs until 2/12/79 at 1500 hrs	Discharge	Sensor malfunction
	2/19/79 at 0700 hrs until 2/19/79 at 0900 hrs	Sensor C	Erratic readings
	2/23/79 at 0700 hrs until 2/23/79 at 1000 hrs	Upstream Intake Discharge Sensor A Sensor B Sensor C Cooling Canal	Paper ran out
March	3/1/79 at 0100 hrs until 3/31/79 at 2400 hrs	Sensor D	Sensor malfunction
	3/5/79 at 2100 hrs until 3/8/79 at 1600 hrs	Cooling Canal	Sensor malfunction
	3/9/79 at 1800 hrs until 3/13/79 at 0800 hrs	Discharge	



HAZLETON ENVIRONMENTAL SCIENCES

Table 2. (continued)

Month	Date and Time	Monitoring Location	Remarks
March (cont.)	3/14/79 at 0100 hrs until 3/27/79 at 1400 hrs	Discharge Cooling Canal	Unable to adjust sensors to field measurements
	3/16/79 at 2100 hrs until 2400 hrs	Upstream Intake Sensor A Sensor B Sensor C	Paper ran out
April	4/1/79 at 0100 hrs until 4/30/79 at 2400 hrs	Sensor D	Sensor malfunction
	4/3/79 at 1600 hrs until 4/6/79 at 1600 hrs	Sensor B	Erratic readings
	4/3/79 at 1800 hrs	Sensor A	Erratic readings
	4/4/79 at 1700 hrs until 4/5/79 at 0300 hrs	Sensor A	Erratic readings
	4/4/79 at 2100 hrs until 4/6/79 at 1500 hrs	Sensor C	Erratic readings
	4/5/79 at 1500 hrs	Sensor A	Erratic readings
	4/8/79 at 1500 hrs until 1600 hrs	Sensor A	Erratic readings
	4/8/79 at 1500 hrs until 4/12/79 at 1200 hrs	Upstream	Erratic readings
	4/11/79 at 0400 hrs until 0600 hrs and at 1600 hrs until 2000 hrs	Sensor A	Erratic readings
4/15/79 at 1200 hrs until 4/15/79 at 2000 hrs	Upstream Intake Cooling Canal Discharge Sensor A Sensor B Sensor C	Paper ran out	

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**HAZLETON ENVIRONMENTAL SCIENCES**

Table 2. (continued)

Month	Date and Time	Monitoring Location	Remarks
April (cont.)	4/20/79 at 1500 hrs until 4/21/79 at 1000 hrs	Upstream	Erratic readings
	4/20/79 at 1600 hrs until 4/30/79 at 2400 hrs	Sensor A	Sensor malfunction
	4/21/79 at 2400 hrs until 4/22/79 at 0800 hrs	Upstream	Erratic readings
	4/24/79 at 0700 hrs until 4/30/79 at 2400 hrs	Upstream	Sensor malfunction
May	5/1/79 at 0100 hrs until 5/31/79 at 2400 hrs	Sensor D	Sensor malfunction
	5/1/79 at 0100 hrs until 5/18/79 at 1700 hrs	Upstream	Sensor malfunction
	5/1/79 at 0100 hrs until 5/4/79 at 1200 hrs	Sensor A	Sensor malfunction
	5/4/79 at 2400 hrs until 5/10/79 at 2400 hrs	Sensor C	Sensor malfunction
	5/7/79 at 0200hrs until 5/7/79 at 1000 hrs	Intake Cooling Canal Discharge Sensor B	Paper ran out
	5/9/79 at 0900 hrs until 5/10/79 at 2100 hrs	Discharge	Erratic readings
	5/18/79 at 2000 hrs	Sensor B	Erratic reading
	5/19/79 at 1500 hrs until 5/31/79 at 2400 hrs	Discharge	Erratic readings possible sensor malfunction

HAZLETON ENVIRONMENTAL SCIENCES

Table 2. (continued)

Month	Date and Time	Monitoring Location	Remarks
May (Cont.)	5/31/79 at 0400 hrs until 5/31/79 at 1000 hrs	Upstream	Erratic readings
June	6/1/79 at 0100 hrs until 6/27/79 at 1600 hrs	Discharge	Sensor malfunction
	6/1/79 at 0100 hrs until 6/22/79 at 1300 hrs	Sensor D	Sensor malfunction
	6/9/79 at 1300 hrs	Upstream Sensor A	Erratic reading
	6/9/79 at 1700 hrs	Upstream	Erratic reading
	6/9/79 at 2200 hrs until 6/10/79 at 0800 hrs	Upstream	Erratic readings
	6/12/79 at 2100 hrs until 6/13/79 at 0700 hrs	Upstream	Erratic readings
	6/12/79 at 2200 hrs until 6/13/79 at 0500 hrs	Sensor A	Erratic readings
	6/18/79 at 0900 hrs until 6/18/79 at 1400 hrs	Upstream	Erratic readings
	6/18/79 at 0900 hrs until 6/18/79 at 1200 hrs	Sensor A	Erratic readings
	6/22/79 at 0100 hrs until 6/30/79 at 2400 hrs	Sensor A	Possible sensor malfunction
	6/23/79 at 0500 hrs until 6/23/79 at 0700 hrs	Sensor D	Erratic readings

**HAZLETON ENVIRONMENTAL SCIENCES**

Table 2. (continued)

Month	Date and Time	Monitoring Location	Remarks
June (Cont.)	6/26/79 at 0700 hrs until 6/26/79 at 2300 hrs	Sensor D	Erratic readings
	6/26/79 at 0900 hrs until 6/27/79 at 1500 hrs	Sensor C	Erratic readings
	6/26/79 at 2400 hrs until 6/27/79 at 1600 hrs	Sensor D	Erratic readings
	6/27/79 at 2000 hrs until 6/27/79 at 2300 hrs	Sensor D	Erratic readings
	6/27/79 at 2400 hrs	Sensor D	Erratic readings
	6/28/79 at 0100 hrs until 6/29/79 at 1700 hrs	Sensor C	Erratic readings
	6/28/79 at 0300 hrs until 6/28/79 at 0500 hrs	Sensor D	Erratic readings
	6/28/79 at 2400 hrs	Sensor D	Erratic reading
	6/29/79 at 0900 hrs	Sensor D	Erratic reading
	6/29/79 at 1200 hrs	Upstream Sensor D	Erratic reading
	6/29/79 at 1700 hrs until 6/29/79 at 1900 hrs	Sensor D	Erratic readings
	6/29/79 at 1900 hrs until 6/30/79 at 2400 hrs	Sensor C	Sensor malfunction
	6/29/79 at 2100 hrs	Discharge Sensor D	Erratic reading
6/30/79 at 1800 hrs	Sensor D	Erratic reading	

**HAZLETON ENVIRONMENTAL SCIENCES**

Table 2. (continued)

Month	Date and Time	Monitoring Location	Remarks
July	7/1/79 at 0100 hrs until 7/17/79 at 1300 hrs	Sensor A	Sensor malfunction
	7/1/79 at 0100 hrs until 7/2/79 at 1200 hrs	Sensor C	Sensor malfunction
	7/2/79 at 2000 hrs	Sensor C	Erratic reading
	7/2/79 at 2400 hrs until 7/12/79 at 1400 hrs	Sensor C	Erratic readings
	7/3/79 at 1100 hrs until 7/31/79 at 2400 hrs	Sensor D	Sensor malfunction
	7/3/79 at 1200 hrs until 7/5/79 at 1200 hrs	Upstream	Sensor malfunction
	7/5/79 at 1400 hrs	Upstream Intake Cooling Canal Discharge Sensor B	Printer turned off by CECO personnel for calibration
	7/10/79 at 1200 hrs until 7/11/79 at 0900 hrs	Upstream Intake Cooling Canal Discharge Sensor B	Paper ran out
	7/11/79 at 1500 hrs	Sensor B Intake	Erratic reading
	7/11/79 at 1500 hrs until 7/13/79 at 1400 hrs	Upstream	Sensor malfunction
	7/12/79 at 1800 hrs	Sensor C	Erratic reading
	7/13/79 at 1300 hrs until 7/16/79 at 1300 hrs	Sensor C	Sensor malfunction

HAZLETON ENVIRONMENTAL SCIENCES

Table 2. (continued)

Month	Date and Time	Monitoring Location	Remarks
July (cont.)	7/13/79 at 2300 hrs until 7/14/79 at 0100 hrs	Upstream	Erratic readings
	7/14/79 at 0700 hrs until 7/14/79 at 1000 hrs	Upstream	Erratic readings
	7/25/79 at 0100 hrs until 7/30/79 at 1200 hrs	Sensor C	Sensor malfunction
	7/27/79 at 1900 hrs until 7/30/79 at 1200 hrs	Upstream	Unable to adjust to field measurements. During this time CECO personnel adjusted the recorder without taking ground truths.
	7/27/79 at 1400 hrs until 7/30/79 at 1200 hrs	Discharge	Sensor malfunction

APPENDIX G

(Related to Chapter 2 of Text)

HOURLY WATER TEMPERATURE DATA

QUAD-CITIES STATION

February 1979 through July 1979

POOR ORIGINAL

TABLE 2. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, FEBRUARY 2, 1979

TIME	UPSTREAM		DISCHARGE		DOWNSTREAM		INTAKE	TIME	UPSTREAM		DISCHARGE		DOWNSTREAM	
	A	B	A	B	A	B			A	B	A	B	A	B
100	32.0	32.0	82.6	32.0	32.0	32.0	100	32.0	32.0	55.0	32.0	32.0	32.0	
200	32.0	32.0	82.1	32.0	32.0	32.0	200	32.0	32.0	58.0	32.0	32.0	32.0	
300	32.0	32.0	81.7	32.0	32.0	32.0	300	32.0	32.0	58.2	32.0	32.0	32.0	
400	32.0	32.0	81.5	32.0	32.0	32.0	400	32.0	32.0	58.1	32.0	32.0	32.0	
500	32.0	32.0	81.6	32.0	32.0	32.0	500	32.0	32.0	58.0	32.0	32.0	32.0	
600	32.0	32.0	81.6	32.0	32.0	32.0	600	32.0	32.0	58.0	32.0	32.0	32.0	
700	32.0	32.0	81.3	32.0	32.0	32.0	700	32.0	32.0	58.0	32.0	32.0	32.0	
800	32.0	32.0	81.0	32.0	32.0	32.0	800	32.0	32.0	58.0	32.0	32.0	32.0	
900	32.0	32.0	81.0	32.0	32.0	32.0	900	32.0	32.0	58.0	32.0	32.0	32.0	
1000	32.0	32.0	81.2	32.0	32.0	32.0	1000	32.0	32.0	57.8	32.0	32.0	32.0	
1100	32.0	32.0	81.2	32.0	32.0	32.0	1100	32.0	32.0	57.9	32.0	32.0	32.0	
1200	32.0	32.0	81.0	32.0	32.0	32.0	1200	32.0	32.0	70.0	32.0	32.0	32.0	
1300	32.0	32.0	83.3	32.0	32.0	32.0	1300	32.0	32.0	59.3	32.0	32.0	32.0	
1400	32.0	32.0	82.7	32.0	32.0	32.0	1400	32.0	32.0	57.8	32.0	32.0	32.0	
1500	32.0	32.0	84.5	32.0	32.0	32.0	1500	32.0	32.0	57.8	32.0	32.0	32.0	
1600	32.0	32.0	84.2	32.0	32.0	32.0	1600	32.0	32.0	57.7	32.0	32.0	32.0	
1700	32.0	32.0	84.2	32.0	32.0	32.0	1700	32.0	32.0	57.8	32.0	32.0	32.0	
1800	32.0	32.0	84.0	32.0	32.0	32.0	1800	32.0	32.0	57.8	32.0	32.0	32.0	
1900	32.0	32.0	84.7	32.0	32.0	32.0	1900	32.0	32.0	58.0	32.0	32.0	32.0	
2000	32.0	32.0	84.6	32.0	32.0	32.0	2000	32.0	32.0	58.0	32.0	32.0	32.0	
2100	32.0	32.0	84.8	32.0	32.0	32.0	2100	32.0	32.0	58.0	32.0	32.0	32.0	
2200	32.0	32.0	84.4	32.0	32.0	32.0	2200	32.0	32.0	58.0	32.0	32.0	32.0	
2300	32.0	32.0	84.4	32.0	32.0	32.0	2300	32.0	32.0	58.0	32.0	32.0	32.0	
2400	32.0	32.0	85.3	32.0	32.0	32.0	2400	32.0	32.0	57.4	32.0	32.0	32.0	

TABLE 3. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, FEBRUARY 3, 1979

TIME	UPSTREAM		DISCHARGE		DOWNSTREAM		INTAKE	TIME	UPSTREAM		DISCHARGE		DOWNSTREAM	
	A	B	A	B	A	B			A	B	A	B	A	B
100	32.0	32.0	57.5	32.0	32.0	32.0	100	32.0	32.0	51.5	32.0	32.0	32.0	
200	32.0	32.0	57.2	32.0	32.0	32.0	200	32.0	32.0	51.3	32.0	32.0	32.0	
300	32.0	32.0	57.5	32.0	32.0	32.0	300	32.0	32.0	52.2	32.0	32.0	32.0	
400	32.0	32.0	57.7	32.0	32.0	32.0	400	32.0	32.0	52.0	32.0	32.0	32.0	
500	32.0	32.0	57.2	32.0	32.0	32.0	500	32.0	32.0	52.0	32.0	32.0	32.0	
600	32.0	32.0	57.5	32.0	32.0	32.0	600	32.0	32.0	52.0	32.0	32.0	32.0	
700	32.0	32.0	57.5	32.0	32.0	32.0	700	32.0	32.0	52.0	32.0	32.0	32.0	
800	32.0	32.0	57.0	32.0	32.0	32.0	800	32.0	32.0	52.0	32.0	32.0	32.0	
900	32.0	32.0	57.4	32.0	32.0	32.0	900	32.0	32.0	52.0	32.0	32.0	32.0	
1000	32.0	32.0	57.3	32.0	32.0	32.0	1000	32.0	32.0	52.0	32.0	32.0	32.0	
1100	32.0	32.0	50.3	32.0	32.0	32.0	1100	32.0	32.0	52.0	32.0	32.0	32.0	
1200	32.0	32.0	53.2	32.0	32.0	32.0	1200	32.0	32.0	52.0	32.0	32.0	32.0	
1300	32.0	32.0	54.2	32.0	32.0	32.0	1300	32.0	32.0	52.0	32.0	32.0	32.0	
1400	32.0	32.0	50.5	32.0	32.0	32.0	1400	32.0	32.0	52.0	32.0	32.0	32.0	
1500	32.0	32.0	50.5	32.0	32.0	32.0	1500	32.0	32.0	52.0	32.0	32.0	32.0	
1600	32.0	32.0	50.4	32.0	32.0	32.0	1600	32.0	32.0	52.0	32.0	32.0	32.0	
1700	32.0	32.0	50.5	32.0	32.0	32.0	1700	32.0	32.0	52.0	32.0	32.0	32.0	
1800	32.0	32.0	50.7	32.0	32.0	32.0	1800	32.0	32.0	52.0	32.0	32.0	32.0	
1900	32.0	32.0	50.6	32.0	32.0	32.0	1900	32.0	32.0	52.0	32.0	32.0	32.0	
2000	32.0	32.0	50.5	32.0	32.0	32.0	2000	32.0	32.0	52.0	32.0	32.0	32.0	
2100	32.0	32.0	50.7	32.0	32.0	32.0	2100	32.0	32.0	52.0	32.0	32.0	32.0	
2200	32.0	32.0	50.7	32.0	32.0	32.0	2200	32.0	32.0	52.0	32.0	32.0	32.0	
2300	32.0	32.0	51.0	32.0	32.0	32.0	2300	32.0	32.0	52.0	32.0	32.0	32.0	
2400	32.0	32.0	51.5	32.0	32.0	32.0	2400	32.0	32.0	52.0	32.0	32.0	32.0	

\*\*\*\*\* INSTRUMENT MALFUNCTION



TABLE 5. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, FEBRUARY 5, 1979

TABLE 6. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, FEBRUARY 6, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		UPSTREAM SENSORS		TIME	UPSTREAM	INTAKE	COOLING CANAL		UPSTREAM SENSORS	
			COLD	DISCHARGE	A	B				A	B	A	B
100	34.0	32.0	33.7	70.7	32.0	32.0	100	32.0	37.0	34.5	76.2	32.0	32.0
200	32.0	32.0	33.5	75.3	32.0	32.0	200	34.0	32.0	32.0	76.2	32.0	32.0
300	32.0	32.0	33.3	76.4	32.0	32.0	300	32.0	32.0	33.3	76.0	32.0	32.0
400	32.0	32.0	33.0	75.0	32.0	32.0	400	32.0	32.0	33.3	76.2	32.0	32.0
500	32.0	32.0	33.0	75.2	32.0	32.0	500	32.0	32.0	33.3	76.2	32.0	32.0
600	32.0	32.0	33.3	75.2	32.0	32.0	600	32.0	32.0	33.2	76.0	32.0	32.0
700	32.0	32.0	33.2	74.8	32.0	32.0	700	32.0	32.0	33.0	76.0	32.0	32.0
800	32.0	32.0	33.2	75.4	32.0	32.0	800	32.0	32.0	32.9	76.4	32.0	32.0
900	32.0	32.0	33.2	75.5	32.0	32.0	900	32.0	32.0	32.0	76.4	32.0	32.0
1000	32.0	32.0	33.2	75.7	32.0	32.0	1000	32.0	32.0	32.0	76.2	32.0	32.0
1100	32.0	32.0	33.5	75.7	32.0	32.0	1100	32.0	32.0	32.0	76.5	32.0	32.0
1200	32.0	32.0	33.5	75.8	32.0	32.0	1200	32.0	32.0	32.0	76.3	32.0	32.0
1300	32.0	32.0	33.3	75.7	32.0	32.0	1300	32.0	32.0	32.0	76.3	32.0	32.0
1400	32.0	32.0	33.0	75.8	32.0	32.0	1400	32.0	32.0	32.0	76.3	32.0	32.0
1500	32.0	32.0	33.5	76.0	32.0	32.0	1500	32.0	32.0	32.0	76.0	32.0	32.0
1600	32.0	32.0	33.4	75.0	32.0	32.0	1600	32.0	32.0	32.0	76.0	32.0	32.0
1700	32.0	32.0	33.5	75.8	32.0	32.0	1700	32.0	32.0	32.0	75.5	32.0	32.0
1800	32.0	32.0	33.7	76.8	32.0	32.0	1800	32.0	32.0	32.0	75.5	32.0	32.0
1900	32.0	32.0	33.7	76.0	32.0	32.0	1900	32.0	32.0	32.0	76.5	32.0	32.0
2000	32.0	32.0	33.6	76.1	32.0	32.0	2000	32.0	32.0	32.0	76.6	32.0	32.0
2100	32.0	32.0	34.0	76.1	32.0	32.0	2100	32.0	32.0	32.0	76.6	32.0	32.0
2200	32.0	32.0	34.2	76.3	32.0	32.0	2200	32.0	32.0	32.0	76.8	32.0	32.0
2300	32.0	32.0	33.8	76.2	32.0	32.0	2300	32.0	32.0	32.0	77.7	32.0	32.0
2400	32.0	32.0	33.8	76.1	32.0	32.0	2400	32.0	32.0	32.0	85.7	32.0	32.0

TABLE 7. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, FEBRUARY 7, 1979

TABLE 8. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, FEBRUARY 8, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		UPSTREAM SENSORS		TIME	UPSTREAM	INTAKE	COOLING CANAL		UPSTREAM SENSORS	
			COLD	DISCHARGE	A	B				A	B	A	B
100	32.0	41.5	50.3	88.3	32.0	32.0	100	32.0	46.0	51.0	96.8	32.0	32.0
200	32.0	44.3	54.5	90.2	32.0	32.0	200	32.0	44.7	50.0	96.0	32.0	32.0
300	32.0	42.8	54.0	91.5	32.0	32.0	300	32.0	45.7	49.5	95.4	32.0	32.0
400	32.0	45.0	55.3	92.5	32.0	32.0	400	32.0	44.5	49.7	95.2	32.0	32.0
500	32.0	44.7	56.4	92.7	32.0	32.0	500	32.0	44.2	50.5	95.4	32.0	32.0
600	32.0	45.0	57.7	93.5	32.0	32.0	600	32.0	43.2	51.0	95.6	32.0	32.0
700	32.0	43.8	57.0	93.8	32.0	32.0	700	32.0	43.4	50.0	95.7	32.0	32.0
800	32.0	44.3	57.7	93.7	32.0	32.0	800	32.0	43.8	49.5	95.5	32.0	32.0
900	32.0	43.6	57.4	94.0	32.0	32.0	900	32.0	44.0	49.2	95.0	32.0	32.0
1000	32.0	42.5	58.0	94.2	32.0	32.0	1000	32.0	44.0	49.3	95.1	32.0	32.0
1100	32.0	43.7	53.7	93.7	32.0	32.0	1100	32.0	44.3	49.0	95.0	32.0	32.0
1200	32.0	43.1	62.7	95.6	32.0	32.0	1200	32.0	44.5	49.5	95.3	32.0	32.0
1300	32.0	43.3	66.3	97.8	32.0	32.0	1300	32.0	44.8	49.2	95.3	32.0	32.0
1400	32.0	43.8	66.5	95.2	32.0	32.0	1400	32.0	44.3	49.2	95.2	32.0	32.0
1500	32.0	45.7	60.6	97.6	32.0	32.0	1500	32.0	45.2	48.5	95.3	32.0	32.0
1600	32.0	45.0	65.3	99.2	32.0	32.0	1600	32.0	45.2	48.5	95.3	32.0	32.0
1700	32.0	46.4	63.1	101.4	32.0	32.0	1700	32.0	45.7	48.2	95.0	32.0	32.0
1800	32.0	46.5	59.2	98.3	32.0	32.0	1800	32.0	45.5	48.2	94.8	32.0	32.0
1900	32.0	46.0	56.3	98.0	32.0	32.0	1900	32.0	45.9	48.3	94.7	32.0	32.0
2000	32.0	45.7	55.7	98.4	32.0	32.0	2000	32.0	44.8	48.3	94.7	32.0	32.0
2100	32.0	45.8	55.4	98.7	32.0	32.0	2100	32.0	44.6	47.6	94.6	32.0	32.0
2200	32.0	44.7	54.7	94.5	32.0	32.0	2200	32.0	44.8	47.3	94.6	32.0	32.0
2300	32.0	44.5	54.7	97.8	32.0	32.0	2300	32.0	44.5	46.5	93.8	32.0	32.0
2400	32.0	46.2	54.0	97.2	32.0	32.0	2400	32.0	44.5	46.3	93.8	32.0	32.0

9999 OR 9999 -- INSTRUMENT MALFUNCTION





TABLE 17. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, FEBRUARY 17, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		DISCHARGE		UPSTREAM SENSORS		DOWNSTREAM SENSORS	
			COLD	END	A	B	A	B	C	D
100	32.0	33.3	60.3	80.1	32.0	32.0	9999	100	32.0	32.0
200	32.0	33.2	60.0	79.8	32.0	32.0	9999	200	32.0	32.0
300	32.0	33.8	65.7	79.8	32.0	32.0	9999	300	32.0	32.0
400	32.0	34.5	64.5	76.5	32.0	32.0	9999	400	32.0	32.0
500	32.0	34.3	64.5	78.2	32.0	32.0	9999	500	32.0	32.0
600	32.0	34.3	65.0	78.7	32.0	32.0	9999	600	32.0	32.0
700	32.0	34.0	65.3	79.3	32.0	32.0	9999	700	32.0	32.0
800	32.0	34.8	65.2	79.2	32.0	32.0	9999	800	32.0	32.0
900	32.0	34.8	65.3	79.3	32.0	32.0	9999	900	32.0	32.0
1000	32.0	34.3	64.4	78.5	32.0	32.0	9999	1000	32.0	32.0
1100	32.0	34.3	64.3	78.5	32.0	32.0	9999	1100	32.0	32.0
1200	32.0	34.1	64.2	78.0	32.0	32.0	9999	1200	32.0	32.0
1300	32.0	34.2	64.3	77.8	32.0	32.0	9999	1300	32.0	32.0
1400	32.0	34.2	64.2	77.8	32.0	32.0	9999	1400	32.0	32.0
1500	32.0	34.2	64.1	78.1	32.0	32.0	9999	1500	32.0	32.0
1600	32.0	34.2	63.5	77.7	32.0	32.0	9999	1600	32.0	32.0
1700	32.0	34.1	63.5	77.3	32.0	32.0	9999	1700	32.0	32.0
1800	32.0	34.3	63.3	77.2	32.0	32.0	9999	1800	32.0	32.0
1900	32.0	34.5	63.0	77.0	32.0	32.0	9999	1900	32.0	32.0
2000	32.0	34.5	62.7	76.6	32.0	32.0	9999	2000	32.0	32.0
2100	32.0	34.2	62.5	76.3	32.0	32.0	9999	2100	32.0	32.0
2200	32.0	34.0	62.0	75.8	32.0	32.0	9999	2200	32.0	32.0
2300	32.0	33.7	61.8	75.5	32.0	32.0	9999	2300	32.0	32.0
2400	32.0	34.4	64.3	75.5	32.0	32.0	9999	2400	32.0	32.0

TABLE 18. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, FEBRUARY 18, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		DISCHARGE		UPSTREAM SENSORS		DOWNSTREAM SENSORS	
			COLD	END	A	B	A	B	C	D
100	32.0	33.3	63.3	75.7	32.0	32.0	9999	100	32.0	32.0
200	32.0	33.7	63.3	75.4	32.0	32.0	9999	200	32.0	32.0
300	32.0	34.3	65.7	71.7	32.0	32.0	9999	300	32.0	32.0
400	32.0	34.5	64.2	68.7	32.0	32.0	9999	400	32.0	32.0
500	32.0	34.3	64.8	67.3	32.0	32.0	9999	500	32.0	32.0
600	32.0	34.6	63.0	66.7	32.0	32.0	9999	600	32.0	32.0
700	32.0	34.8	62.7	77.6	32.0	32.0	9999	700	32.0	32.0
800	32.0	34.8	61.3	66.5	32.0	32.0	9999	800	32.0	32.0
900	32.0	33.2	60.3	65.2	32.0	32.0	9999	900	32.0	32.0
1000	32.0	32.0	63.2	63.5	32.0	32.0	9999	1000	32.0	32.0
1100	32.0	32.0	59.5	52.5	32.0	32.0	9999	1100	32.0	32.0
1200	32.0	32.0	59.8	52.5	32.0	32.0	9999	1200	32.0	32.0
1300	32.0	32.0	58.7	62.5	32.0	32.0	9999	1300	32.0	32.0
1400	32.0	32.0	58.7	62.0	32.0	32.0	9999	1400	32.0	32.0
1500	32.0	32.3	57.3	61.3	32.0	32.0	9999	1500	32.0	32.0
1600	32.0	32.5	56.7	60.5	32.0	32.0	9999	1600	32.0	32.0
1700	32.0	32.2	56.4	50.5	32.0	32.0	9999	1700	32.0	32.0
1800	32.0	32.0	56.5	40.3	32.0	32.0	9999	1800	32.0	32.0
1900	32.0	32.0	56.2	60.3	32.0	32.0	9999	1900	32.0	32.0
2000	32.0	32.0	55.5	60.4	32.0	32.0	9999	2000	32.0	32.0
2100	32.0	32.0	55.1*	60.1	32.0	32.0	9999	2100	32.0	32.0
2200	32.0	32.0	54.0	59.0	32.0	32.0	9999	2200	32.0	32.0
2300	32.0	32.0	54.0	59.0	32.0	32.0	9999	2300	32.0	32.0
2400	32.0	32.0	54.0	59.5	32.0	32.0	9999	2400	32.0	32.0

TABLE 19. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, FEBRUARY 19, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		DISCHARGE		UPSTREAM SENSORS		DOWNSTREAM SENSORS	
			COLD	END	A	B	A	B	C	D
100	32.0	36.5	54.1	60.5	32.0	32.0	9999	100	32.0	32.0
200	32.0	36.7	53.8	61.0	32.0	32.0	9999	200	32.0	32.0
300	32.0	36.3	63.8	60.9	32.0	32.0	9999	300	32.0	32.0
400	32.0	36.0	53.5	50.6	32.0	32.0	9999	400	32.0	32.0
500	32.0	37.7	53.7	60.8	32.0	32.0	9999	500	32.0	32.0
600	32.2	35.6	54.6	61.7	32.0	32.0	9999	600	32.0	32.0
700	32.3	36.5	54.7	62.2	32.0	32.0	9999	700	32.0	32.0
800	32.2	35.3	54.7	62.0	32.0	32.0	9999	800	32.0	32.0
900	32.2	34.8	54.6	62.3	32.0	32.0	9999	900	32.0	32.0
1000	32.0	34.2	54.7	62.3	32.0	32.0	9999	1000	32.0	32.0
1100	32.0	33.7	55.6	63.2	32.0	32.0	9999	1100	32.0	32.0
1200	32.0	32.0	59.3	63.8	32.0	32.0	9999	1200	32.0	32.0
1300	32.0	42.2	50.3	64.3	32.0	32.0	9999	1300	32.0	32.0
1400	32.0	35.5	57.0	65.0	32.0	32.0	9999	1400	32.0	32.0
1500	32.0	35.7	57.4	65.2	32.0	32.0	9999	1500	32.0	32.0
1600	32.0	36.4	58.0	66.0	32.0	32.0	9999	1600	32.0	32.0
1700	32.0	36.5	58.5	66.7	32.0	32.0	9999	1700	32.0	32.0
1800	32.0	32.8	58.0	67.5	32.0	32.0	9999	1800	32.0	32.0
1900	32.0	34.8	58.3	67.5	32.0	32.0	9999	1900	32.0	32.0
2000	32.0	37.8	59.3	67.5	32.0	32.0	9999	2000	32.0	32.0
2100	32.0	40.0	59.7	68.3	32.0	32.0	9999	2100	32.0	32.0
2200	32.0	36.6	60.0	68.8	32.0	32.0	9999	2200	32.0	32.0
2300	32.0	38.1	60.5	69.8	32.0	32.0	9999	2300	32.0	32.0
2400	32.3	33.5	61.0	70.1	32.0	32.0	9999	2400	32.0	32.0

TABLE 20. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, FEBRUARY 20, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		DISCHARGE		UPSTREAM SENSORS		DOWNSTREAM SENSORS	
			COLD	END	A	B	A	B	C	D
100	32.0	32.0	60.8	69.8	32.0	32.0	9999	100	32.0	32.0
200	32.0	32.0	61.0	68.4	32.0	32.0	9999	200	32.0	32.0
300	32.0	32.0	61.0	68.4	32.0	32.0	9999	300	32.0	32.0
400	32.0	32.0	61.3	68.7	32.0	32.0	9999	400	32.0	32.0
500	32.0	32.0	61.5	68.2	32.0	32.0	9999	500	32.0	32.0
600	32.0	32.0	61.3	68.4	32.0	32.0	9999	600	32.0	32.0
700	32.0	32.0	60.8	69.2	32.0	32.0	9999	700	32.0	32.0
800	32.0	32.0	61.0	69.2	32.0	32.0	9999	800	32.0	32.0
900	32.0	32.0	61.5	69.3	32.0	32.0	9999	900	32.0	32.0
1000	32.0	32.0	62.0	69.7	32.0	32.0	9999	1000	32.0	32.0
1100	32.0	32.0	62.5	69.3	32.0	32.0	9999	1100	32.0	32.0
1200	32.0	32.0	62.8	70.3	32.0	32.0	9999	1200	32.0	32.0
1300	32.0	32.0	63.3	70.8	32.0	32.0	9999	1300	32.0	32.0
1400	32.0	32.0	64.3	70.3	32.0	32.0	9999	1400	32.0	32.0
1500	32.0	32.0	65.2	71.7	32.0	32.0	9999	1500	32.0	32.0
1600	32.0	32.0	65.3	71.2	32.0	32.0	9999	1600	32.0	32.0
1700	32.0	32.0	65.3	71.2	32.0	32.0	9999	1700	32.0	32.0
1800	32.0	32.0	65.6	71.2	32.0	32.0	9999	1800	32.0	32.0
1900	32.0	32.0	66.3	71.2	32.0	32.0	9999	1900	32.0	32.0
2000	32.0	32.0	66.4	71.9	32.0	32.0	9999	2000	32.0	32.0
2100	32.0	32.0	66.4	71.9	32.0	32.0	9999	2100	32.0	32.0
2200	32.0	32.0	66.1	71.7	32.0	32.0	9999	2200	32.0	32.0
2300	32.0	32.0	67.1	71.7	32.0	32.0	9999	2300	32.0	32.0
2400	32.0	32.0	68.3	71.5	32.0	32.0	9999	2400	32.0	32.0

\*9999 ON 9999 -- INSTRUMENT MALFUNCTION

TABLE 22. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, FEBRUARY 22, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE		UPSTREAM INTAKE		COOLING CANAL COLD DISCHARGE		DOWNSTREAM SENSORS		DOWNSTREAM SENSORS	
		A	B	A	B	A	B	A	B	A	B
100	32.7	33.1	81.8	32.0	40.7	91.0	32.7	32.0	32.0	32.0	32.0
200	32.5	37.0	81.5	32.0	36.8	89.7	32.0	32.0	32.0	32.0	32.0
300	32.0	32.5	81.2	32.0	35.7	90.0	32.0	32.0	32.0	32.0	32.0
400	32.0	37.5	81.5	32.0	44.5	91.0	32.0	32.0	32.0	32.0	32.0
500	32.0	39.3	81.8	32.0	46.7	91.9	32.0	32.0	32.0	32.0	32.0
600	32.0	32.0	82.0	32.0	40.0	90.8	32.0	32.0	32.0	32.0	32.0
700	32.0	32.0	82.0	32.0	47.7	91.0	32.0	32.0	32.0	32.0	32.0
800	32.0	32.0	81.4	32.0	38.2	91.1	32.0	32.0	32.0	32.0	32.0
900	32.0	32.0	80.5	32.0	41.7	91.5	32.0	32.0	32.0	32.0	32.0
1000	32.0	32.0	76.7	32.0	40.6	91.0	32.0	32.0	32.0	32.0	32.0
1100	32.1	32.0	67.4	32.0	36.1	91.3	32.0	32.0	32.0	32.0	32.0
1200	32.1	32.0	65.9	32.0	38.1	91.6	32.0	32.0	32.0	32.0	32.0
1300	32.1	32.0	65.3	32.0	36.0	92.0	32.0	32.0	32.0	32.0	32.0
1400	32.1	32.0	66.0	32.0	44.0	91.8	32.0	32.0	32.0	32.0	32.0
1500	32.2	32.0	65.5	32.0	44.2	92.5	32.0	32.0	32.0	32.0	32.0
1600	32.3	32.0	65.5	32.0	43.2	92.5	32.0	32.0	32.0	32.0	32.0
1700	32.3	32.0	64.7	32.0	43.0	92.8	32.0	32.0	32.0	32.0	32.0
1800	32.3	32.0	64.0	32.0	39.0	92.5	32.0	32.0	32.0	32.0	32.0
1900	32.2	32.0	63.8	32.0	44.3	93.6	32.0	32.0	32.0	32.0	32.0
2000	32.2	32.0	63.4	32.0	45.1	94.4	32.0	32.0	32.0	32.0	32.0
2100	32.0	32.0	63.1	32.0	44.7	95.7	32.0	32.0	32.0	32.0	32.0
2200	32.0	32.0	61.4	32.0	48.3	94.3	32.0	32.0	32.0	32.0	32.0
2300	32.0	32.0	60.6	32.0	48.3	95.3	32.0	32.0	32.0	32.0	32.0
2400	32.0	32.0	60.1	32.0	46.7	96.0	32.0	32.0	32.0	32.0	32.0

TABLE 23. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, FEBRUARY 23, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE		UPSTREAM INTAKE		COOLING CANAL COLD DISCHARGE		DOWNSTREAM SENSORS		DOWNSTREAM SENSORS	
		A	B	A	B	A	B	A	B	A	B
100	32.0	43.0	97.2	32.0	40.0	91.5	32.0	32.0	32.0	32.0	32.0
200	32.0	43.8	97.3	32.0	37.7	91.5	32.0	32.0	32.0	32.0	32.0
300	32.0	44.8	99.2	32.0	41.3	92.1	32.0	32.0	32.0	32.0	32.0
400	32.0	45.7	99.7	32.0	36.0	92.6	32.0	32.0	32.0	32.0	32.0
500	32.0	45.8	97.8	32.0	37.1	93.5	32.0	32.0	32.0	32.0	32.0
600	32.0	44.5	96.5	32.0	38.5	93.1	32.0	32.0	32.0	32.0	32.0
700	32.0	40.9	92.9	32.0	46.6	89.6	32.0	32.0	32.0	32.0	32.0
800	32.0	40.9	92.9	32.0	38.5	89.0	32.0	32.0	32.0	32.0	32.0
900	32.0	40.0	90.9	32.0	36.5	89.0	32.0	32.0	32.0	32.0	32.0
1000	32.1	35.2	85.2	32.0	35.0	89.0	32.0	32.0	32.0	32.0	32.0
1100	32.2	35.5	86.0	32.0	35.2	89.0	32.0	32.0	32.0	32.0	32.0
1200	32.3	35.0	84.7	32.0	35.2	90.0	32.0	32.0	32.0	32.0	32.0
1300	32.3	35.6	82.6	32.0	37.1	90.7	32.0	32.0	32.0	32.0	32.0
1400	32.3	35.5	82.2	32.0	35.2	88.8	32.0	32.0	32.0	32.0	32.0
1500	32.3	35.5	83.5	32.0	34.5	88.3	32.0	32.0	32.0	32.0	32.0
1600	32.1	33.0	87.0	32.0	32.0	88.7	32.0	32.0	32.0	32.0	32.0
1700	32.0	35.2	88.4	32.0	33.5	89.7	32.0	32.0	32.0	32.0	32.0
1800	32.0	35.7	87.8	32.0	32.0	89.2	32.0	32.0	32.0	32.0	32.0
1900	32.0	35.1	86.5	32.0	34.0	87.2	32.0	32.0	32.0	32.0	32.0
2000	32.0	35.2	86.0	32.0	34.3	86.7	32.0	32.0	32.0	32.0	32.0
2100	32.0	38.4	84.5	32.0	32.0	85.7	32.0	32.0	32.0	32.0	32.0
2200	32.0	38.3	84.5	32.0	32.0	85.3	32.0	32.0	32.0	32.0	32.0
2300	32.0	37.7	81.3	32.0	32.0	84.4	32.0	32.0	32.0	32.0	32.0
2400	32.0	38.5	81.3	32.0	32.0	83.6	32.0	32.0	32.0	32.0	32.0

64999 Dk 4999 -- INSTRUMENT MALFUNCTION



TABLE 29. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 1, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE		DOWNSTREAM SENSORS		TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE		DOWNSTREAM SENSORS	
		END	END	A	B			A	B	C	D
100	32.0	69.8	71.8	32.2	32.3	69999	32.0	64.7	32.0	32.3	69999
200	32.0	65.5	67.9	32.2	32.3	69999	32.0	64.2	32.0	32.3	69999
300	32.0	67.0	66.7	32.3	32.2	69999	32.0	64.2	32.0	32.3	69999
400	32.0	69.5	69.5	32.0	32.2	69999	32.0	64.2	32.0	32.3	69999
500	32.0	68.3	70.2	32.0	32.2	69999	32.0	64.2	32.0	32.3	69999
600	32.0	66.4	68.0	32.0	32.2	69999	32.0	67.0	32.0	32.3	69999
700	32.0	65.1	66.5	32.0	32.2	69999	32.0	67.0	32.0	32.3	69999
800	32.0	65.8	67.3	32.0	32.2	69999	32.0	68.5	32.0	32.3	69999
900	32.0	67.6	68.2	32.0	32.3	69999	32.0	68.0	32.0	32.4	69999
1000	32.0	66.1	67.5	32.0	32.5	69999	32.0	68.3	32.0	32.5	69999
1100	32.5	64.6	67.0	32.0	32.7	69999	32.0	70.4	32.0	32.5	69999
1200	32.2	63.7	66.5	32.0	32.7	69999	32.0	70.5	32.0	32.5	69999
1300	32.5	64.6	67.0	32.0	32.7	69999	32.0	70.9	32.0	32.5	69999
1400	32.7	64.6	67.5	32.0	32.7	69999	32.0	71.8	32.0	32.5	69999
1500	32.8	63.4	66.2	32.0	32.5	69999	32.0	72.1	32.0	32.5	69999
1600	32.2	63.4	66.2	32.0	32.5	69999	32.0	72.3	32.0	32.5	69999
1700	32.4	64.4	66.4	32.0	32.4	69999	32.0	72.3	32.0	32.5	69999
1800	32.4	63.9	66.8	32.0	32.4	69999	32.0	72.5	32.0	32.4	69999
1900	32.1	62.9	66.3	32.0	32.3	69999	32.0	72.3	32.0	32.3	69999
2000	32.0	62.9	66.3	32.0	32.4	69999	32.0	72.3	32.0	32.4	69999
2100	32.2	62.9	65.6	32.0	32.3	69999	32.0	72.0	32.0	32.5	69999
2200	32.1	62.9	66.0	32.0	32.2	69999	32.0	72.8	32.0	32.6	69999
2300	32.0	64.4	65.3	32.0	32.0	69999	32.0	73.0	32.0	32.6	69999
2400	32.2	62.1	65.0	32.0	32.3	69999	32.0	73.4	32.0	32.0	69999

TABLE 30. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 2, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE		DOWNSTREAM SENSORS		TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE		DOWNSTREAM SENSORS	
		END	END	A	B			A	B	C	D
100	32.0	69.8	71.8	32.2	32.3	69999	32.0	64.7	32.0	32.3	69999
200	32.0	65.5	67.9	32.2	32.3	69999	32.0	64.2	32.0	32.3	69999
300	32.0	67.0	66.7	32.3	32.2	69999	32.0	64.2	32.0	32.3	69999
400	32.0	69.5	69.5	32.0	32.2	69999	32.0	64.2	32.0	32.3	69999
500	32.0	68.3	70.2	32.0	32.2	69999	32.0	64.2	32.0	32.3	69999
600	32.0	66.4	68.0	32.0	32.2	69999	32.0	67.0	32.0	32.3	69999
700	32.0	65.1	66.5	32.0	32.2	69999	32.0	67.0	32.0	32.3	69999
800	32.0	65.8	67.3	32.0	32.2	69999	32.0	68.5	32.0	32.3	69999
900	32.0	67.6	68.2	32.0	32.3	69999	32.0	68.0	32.0	32.4	69999
1000	32.0	66.1	67.5	32.0	32.5	69999	32.0	68.3	32.0	32.5	69999
1100	32.5	64.6	67.0	32.0	32.7	69999	32.0	70.4	32.0	32.5	69999
1200	32.2	63.7	66.5	32.0	32.7	69999	32.0	70.5	32.0	32.5	69999
1300	32.5	64.6	67.0	32.0	32.7	69999	32.0	70.9	32.0	32.5	69999
1400	32.7	64.6	67.5	32.0	32.7	69999	32.0	71.8	32.0	32.5	69999
1500	32.8	63.4	66.2	32.0	32.5	69999	32.0	72.1	32.0	32.5	69999
1600	32.2	63.4	66.2	32.0	32.5	69999	32.0	72.3	32.0	32.5	69999
1700	32.4	64.4	66.4	32.0	32.4	69999	32.0	72.3	32.0	32.5	69999
1800	32.4	63.9	66.8	32.0	32.4	69999	32.0	72.5	32.0	32.4	69999
1900	32.1	62.9	66.3	32.0	32.3	69999	32.0	72.3	32.0	32.3	69999
2000	32.0	62.9	66.3	32.0	32.4	69999	32.0	72.3	32.0	32.4	69999
2100	32.2	62.9	65.6	32.0	32.3	69999	32.0	72.0	32.0	32.5	69999
2200	32.1	62.9	66.0	32.0	32.2	69999	32.0	72.8	32.0	32.6	69999
2300	32.0	64.4	65.3	32.0	32.0	69999	32.0	73.0	32.0	32.6	69999
2400	32.2	62.1	65.0	32.0	32.3	69999	32.0	73.4	32.0	32.0	69999

TABLE 31. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 3, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE		DOWNSTREAM SENSORS		TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE		DOWNSTREAM SENSORS	
		END	END	A	B			A	B	C	D
100	32.0	69.8	71.8	32.2	32.0	69999	32.0	94.6	32.0	32.0	69999
200	32.0	61.4	65.8	32.0	32.0	69999	32.0	92.0	32.0	32.0	69999
300	32.0	68.0	78.6	32.0	32.0	69999	32.0	89.6	32.0	32.0	69999
400	32.0	69.6	80.3	32.0	32.0	69999	32.0	86.8	32.0	32.0	69999
500	32.0	69.1	82.0	32.0	32.0	69999	32.0	83.2	32.0	32.0	69999
600	32.0	69.9	82.0	32.0	32.0	69999	32.0	82.8	32.0	32.0	69999
700	32.2	72.3	85.0	32.0	32.0	69999	32.0	83.2	32.0	32.0	69999
800	32.2	73.1	85.3	32.0	32.0	69999	32.0	83.2	32.0	32.0	69999
900	32.2	74.1	86.5	32.0	32.0	69999	32.0	86.2	32.0	32.0	69999
1000	32.0	74.6	86.7	32.0	32.0	69999	32.0	86.2	32.0	32.0	69999
1100	32.1	76.3	87.5	32.0	32.0	69999	32.0	81.7	32.0	32.1	69999
1200	32.0	77.3	90.0	32.0	32.0	69999	32.0	81.4	32.0	32.4	69999
1300	32.0	77.9	90.3	32.0	32.0	69999	32.0	81.0	32.0	32.3	69999
1400	32.0	78.6	90.8	32.0	32.0	69999	32.0	81.0	32.0	32.6	69999
1500	32.0	79.3	91.8	32.0	32.0	69999	32.0	80.6	32.0	32.5	69999
1600	32.0	80.8	93.0	32.0	32.0	69999	32.0	80.1	32.0	32.5	69999
1700	32.0	81.3	94.0	32.0	32.0	69999	32.0	79.8	32.0	32.4	69999
1800	32.0	81.9	94.1	32.0	32.0	69999	32.0	79.0	32.0	32.3	69999
1900	32.0	81.4	94.4	32.0	32.0	69999	32.0	78.5	32.0	32.6	69999
2000	32.0	83.1	95.0	32.0	32.0	69999	32.0	78.5	32.0	32.0	69999
2100	32.0	83.5	95.0	32.0	32.0	69999	32.0	78.2	32.0	32.0	69999
2200	32.0	83.9	96.9	32.0	32.0	69999	32.0	82.3	32.0	32.0	69999
2300	32.0	84.0	95.0	32.0	32.0	69999	32.0	82.4	32.0	32.0	69999
2400	32.0	84.3	95.0	32.0	32.0	69999	32.0	82.9	32.0	32.0	69999

69999 DA 9999 -- INSTRUMENT MALFUNCTION





TABLE 36. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 10, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE		UPSTREAM SENSORS		DOWNSTREAM SENSORS	
		END	INTAKE	A	B	A	B
100	32.2	77.0	91.7	32.0	32.0	32.0	32.0
200	32.2	76.8	91.5	32.0	32.0	32.0	32.0
300	32.3	77.2	91.7	32.0	32.0	32.0	32.0
400	32.2	77.4	92.0	32.0	32.0	32.0	32.0
500	32.3	77.4	92.6	32.0	32.0	32.0	32.0
600	32.0	77.3	92.5	32.0	32.0	32.0	32.0
700	32.3	77.5	92.7	32.0	32.0	32.0	32.0
800	32.2	77.8	93.8	32.0	32.0	32.0	32.0
900	32.4	78.0	93.8	32.0	32.0	32.0	32.0
1000	32.3	78.7	94.8	32.0	32.0	32.0	32.0
1100	32.3	79.0	94.3	32.0	32.0	32.0	32.0
1200	32.3	79.8	95.5	32.0	32.0	32.0	32.0
1300	32.4	79.8	95.7	32.0	32.0	32.0	32.0
1400	32.6	79.7	94.6	32.0	32.0	32.0	32.0
1500	32.6	79.2	95.1	32.0	32.0	32.0	32.0
1600	32.7	78.5	94.0	32.0	32.0	32.0	32.0
1700	32.6	77.6	93.3	32.0	32.0	32.0	32.0
1800	32.3	77.8	93.9	32.0	32.0	32.0	32.0
1900	32.2	77.6	93.9	32.0	32.0	32.0	32.0
2000	32.0	78.0	93.9	32.0	32.0	32.0	32.0
2100	32.0	78.6	93.9	32.0	32.0	32.0	32.0
2200	32.0	79.9	93.9	32.0	32.0	32.0	32.0
2300	32.0	79.9	93.9	32.0	32.0	32.0	32.0
2400	32.0	79.6	93.9	32.0	32.0	32.0	32.0

TABLE 39. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 11, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE		UPSTREAM SENSORS		DOWNSTREAM SENSORS	
		END	INTAKE	A	B	A	B
100	32.1	79.0	93.9	32.0	32.0	32.0	32.0
200	32.1	78.4	93.9	32.0	32.0	32.0	32.0
300	32.0	78.4	93.9	32.0	32.0	32.0	32.0
400	32.1	78.5	93.9	32.0	32.0	32.0	32.0
500	32.0	77.4	93.9	32.0	32.0	32.0	32.0
600	32.0	75.8	93.9	32.0	32.0	32.0	32.0
700	34.0	76.4	93.9	32.0	32.0	32.0	32.0
800	34.0	77.4	93.9	32.0	32.0	32.0	32.0
900	32.0	78.6	93.9	32.0	32.0	32.0	32.0
1000	32.2	77.9	93.9	32.0	32.0	32.0	32.0
1100	32.2	78.8	93.9	32.0	32.0	32.0	32.0
1200	32.6	80.1	93.9	32.0	32.0	32.0	32.0
1300	32.8	79.9	93.9	32.0	32.0	32.0	32.0
1400	32.0	80.8	93.9	32.0	32.0	32.0	32.0
1500	33.1	81.8	93.9	32.0	32.0	32.0	32.0
1600	33.1	82.3	93.9	32.0	32.0	32.0	32.0
1700	32.7	82.6	93.9	32.0	32.0	32.0	32.0
1800	32.4	82.9	93.9	32.0	32.0	32.0	32.0
1900	32.3	83.1	93.9	32.0	32.0	32.0	32.0
2000	32.2	83.0	93.9	32.0	32.0	32.0	32.0
2100	32.2	83.1	93.9	32.0	32.0	32.0	32.0
2200	32.2	83.1	93.9	32.0	32.0	32.0	32.0
2300	32.2	82.6	93.9	32.0	32.0	32.0	32.0
2400	32.2	82.3	93.9	32.0	32.0	32.0	32.0

TABLE 40. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 12, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE		UPSTREAM SENSORS		DOWNSTREAM SENSORS	
		END	INTAKE	A	B	A	B
100	32.2	81.1	93.9	32.0	32.0	32.0	32.0
200	32.0	81.3	93.9	32.0	32.0	32.0	32.0
300	32.0	81.4	93.9	32.0	32.0	32.0	32.0
400	32.3	81.6	93.9	32.0	32.0	32.0	32.0
500	32.0	81.6	93.9	32.0	32.0	32.0	32.0
600	32.0	81.9	93.9	32.0	32.0	32.0	32.0
700	32.0	82.1	93.9	32.0	32.0	32.0	32.0
800	32.0	82.3	93.9	32.0	32.0	32.0	32.0
900	32.0	82.5	93.9	32.0	32.0	32.0	32.0
1000	32.4	83.1	93.9	32.0	32.0	32.0	32.0
1100	32.5	83.3	93.9	32.0	32.0	32.0	32.0
1200	32.5	83.6	93.9	32.0	32.0	32.0	32.0
1300	32.7	83.3	93.9	32.0	32.0	32.0	32.0
1400	33.0	83.3	93.9	32.0	32.0	32.0	32.0
1500	33.2	83.3	93.9	32.0	32.0	32.0	32.0
1600	33.2	83.1	93.9	32.0	32.0	32.0	32.0
1700	32.8	83.8	93.9	32.0	32.0	32.0	32.0
1800	32.5	83.9	93.9	32.0	32.0	32.0	32.0
1900	32.5	84.1	93.9	32.0	32.0	32.0	32.0
2000	32.2	84.1	93.9	32.0	32.0	32.0	32.0
2100	32.2	84.1	93.9	32.0	32.0	32.0	32.0
2200	32.0	84.3	93.9	32.0	32.0	32.0	32.0
2300	32.0	84.6	93.9	32.0	32.0	32.0	32.0
2400	32.4	85.3	93.9	32.0	32.0	32.0	32.0

9399 DR 9999 -- INSTRUMENT MALFUNCTION

TABLE 41. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 13, 1979

TIME	UPSTREAM			DISCHARGE			DOWNSTREAM SENSORS		
	TIME	UPSTREAM	INTAKE	CANAL COLD DISCHARGE			DOWNSTREAM SENSORS		
				A	B	C	A	B	C
10J	32.2	45.1	96.8	32.0	9999	32.0	9999	32.0	9999
20J	32.2	45.3	96.5	32.0	9999	32.0	9999	32.0	9999
30J	32.2	45.6	96.7	32.0	9999	32.0	9999	32.0	9999
40J	32.2	44.9	97.3	32.0	9999	32.0	9999	32.0	9999
50J	32.2	44.5	97.8	32.0	9999	32.0	9999	32.0	9999
60J	32.2	46.5	98.0	32.0	9999	32.0	9999	32.0	9999
70J	32.2	46.6	97.3	32.0	9999	32.0	9999	32.0	9999
80J	32.3	45.1	97.2	32.0	9999	32.0	9999	32.0	9999
90J	32.3	45.7	97.1	32.0	9999	32.0	9999	32.0	9999
100J	32.3	46.1	97.9	32.0	9999	32.0	9999	32.0	9999
110J	32.3	47.6	98.4	32.0	9999	32.0	9999	32.0	9999
120J	32.3	48.6	98.6	32.0	9999	32.0	9999	32.0	9999
130J	32.3	49.1	99.1	32.0	9999	32.0	9999	32.0	9999
140J	32.4	46.4	97.1	32.0	9999	32.0	9999	32.0	9999
150J	32.4	46.1	97.1	32.0	9999	32.0	9999	32.0	9999
160J	32.4	47.1	97.1	32.0	9999	32.0	9999	32.0	9999
170J	32.4	47.4	97.8	32.0	9999	32.0	9999	32.0	9999
180J	32.4	47.8	98.0	32.0	9999	32.0	9999	32.0	9999
190J	32.4	47.8	98.0	32.0	9999	32.0	9999	32.0	9999
200J	32.4	47.8	98.0	32.0	9999	32.0	9999	32.0	9999
210J	32.4	47.8	98.0	32.0	9999	32.0	9999	32.0	9999
220J	32.4	47.8	98.0	32.0	9999	32.0	9999	32.0	9999
230J	32.4	47.8	98.0	32.0	9999	32.0	9999	32.0	9999
240J	32.0	45.7	96.4	32.0	9999	32.0	9999	32.0	9999

TABLE 43. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 15, 1979

TIME	UPSTREAM			DISCHARGE			DOWNSTREAM SENSORS		
	TIME	UPSTREAM	INTAKE	CANAL COLD DISCHARGE			DOWNSTREAM SENSORS		
				A	B	C	A	B	C
10J	32.0	45.0	9999	32.0	9999	32.0	9999	32.0	9999
20J	32.0	47.1	9999	32.0	9999	32.0	9999	32.0	9999
30J	32.0	47.3	9999	32.0	9999	32.0	9999	32.0	9999
40J	32.0	47.5	9999	32.0	9999	32.0	9999	32.0	9999
50J	32.0	45.3	9999	32.0	9999	32.0	9999	32.0	9999
60J	32.0	47.5	9999	32.0	9999	32.0	9999	32.0	9999
70J	32.0	47.3	9999	32.0	9999	32.0	9999	32.0	9999
80J	32.0	47.4	9999	32.0	9999	32.0	9999	32.0	9999
90J	32.0	49.3	9999	32.0	9999	32.0	9999	32.0	9999
100J	32.0	48.0	9999	32.0	9999	32.0	9999	32.0	9999
110J	32.0	47.2	9999	32.0	9999	32.0	9999	32.0	9999
120J	32.0	47.9	9999	32.0	9999	32.0	9999	32.0	9999
130J	32.1	47.3	9999	32.0	9999	32.0	9999	32.0	9999
140J	32.1	48.2	9999	32.0	9999	32.0	9999	32.0	9999
150J	32.3	49.0	9999	32.0	9999	32.0	9999	32.0	9999
160J	32.1	48.0	9999	32.0	9999	32.0	9999	32.0	9999
170J	32.0	48.4	9999	32.0	9999	32.0	9999	32.0	9999
180J	32.0	48.6	9999	32.0	9999	32.0	9999	32.0	9999
190J	32.0	48.9	9999	32.0	9999	32.0	9999	32.0	9999
200J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
210J	32.0	47.2	9999	32.0	9999	32.0	9999	32.0	9999
220J	32.0	47.5	9999	32.0	9999	32.0	9999	32.0	9999
230J	32.0	47.4	9999	32.0	9999	32.0	9999	32.0	9999
240J	32.0	47.2	9999	32.0	9999	32.0	9999	32.0	9999

9999 OR 9999 -- INSTRUMENT MALFUNCTION

TABLE 42. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 16, 1979

TIME	UPSTREAM			DISCHARGE			DOWNSTREAM SENSORS		
	TIME	UPSTREAM	INTAKE	CANAL COLD DISCHARGE			DOWNSTREAM SENSORS		
				A	B	C	A	B	C
10J	32.0	47.1	96.4	32.0	9999	32.0	9999	32.0	9999
20J	32.0	46.9	96.8	32.0	9999	32.0	9999	32.0	9999
30J	32.0	47.4	96.2	32.0	9999	32.0	9999	32.0	9999
40J	32.0	48.3	96.3	32.0	9999	32.0	9999	32.0	9999
50J	32.0	47.9	96.8	32.0	9999	32.0	9999	32.0	9999
60J	32.0	48.8	96.7	32.0	9999	32.0	9999	32.0	9999
70J	32.0	48.8	96.7	32.0	9999	32.0	9999	32.0	9999
80J	32.0	49.7	96.5	32.0	9999	32.0	9999	32.0	9999
90J	32.0	49.1	96.3	32.0	9999	32.0	9999	32.0	9999
100J	32.0	49.1	96.3	32.0	9999	32.0	9999	32.0	9999
110J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
120J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
130J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
140J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
150J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
160J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
170J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
180J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
190J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
200J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
210J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
220J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
230J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999
240J	32.0	49.8	96.5	32.0	9999	32.0	9999	32.0	9999

TABLE 44. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 16, 1979

TIME	UPSTREAM			DISCHARGE			DOWNSTREAM SENSORS		
	TIME	UPSTREAM	INTAKE	CANAL COLD DISCHARGE			DOWNSTREAM SENSORS		
				A	B	C	A	B	C
10J	32.0	46.5	9999	32.0	9999	32.0	9999	32.0	9999
20J	32.0	47.4	9999	32.0	9999	32.0	9999	32.0	9999
30J	32.0	47.6	9999	32.0	9999	32.0	9999	32.0	9999
40J	32.0	47.1	9999	32.0	9999	32.0	9999	32.0	9999
50J	32.0	47.1	9999	32.0	9999	32.0	9999	32.0	9999
60J	32.0	47.6	9999	32.0	9999	32.0	9999	32.0	9999
70J	32.0	47.6	9999	32.0	9999	32.0	9999	32.0	9999
80J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
90J	32.0	48.4	9999	32.0	9999	32.0	9999	32.0	9999
100J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
110J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
120J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
130J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
140J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
150J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
160J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
170J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
180J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
190J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
200J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
210J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
220J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
230J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999
240J	32.0	48.3	9999	32.0	9999	32.0	9999	32.0	9999



TABLE 49. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 21, 1979

COOLING CANAL COLD DISCHARGE		UPSTREAM INTAKE		DOWNSTREAM SENSORS		DISCHARGE		DOWNSTREAM SENSORS	
TIME	UPSTREAM	INTAKE	A	B	C	END	A	B	C
100	32.0	46.7	32.0	32.0	32.0	32.0	32.0	32.0	32.0
200	32.0	44.7	32.0	32.0	32.0	32.0	32.0	32.0	32.0
300	32.0	48.7	32.0	32.0	32.0	32.0	32.0	32.0	32.0
400	32.0	42.6	32.0	32.0	32.0	32.0	32.0	32.0	32.0
500	32.0	47.3	32.0	32.0	32.0	32.0	32.0	32.0	32.0
600	32.0	47.5	32.0	32.0	32.0	32.0	32.0	32.0	32.0
700	32.0	45.4	32.0	32.0	32.0	32.0	32.0	32.0	32.0
800	32.0	44.9	32.0	32.0	32.0	32.0	32.0	32.0	32.0
900	32.0	48.4	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1000	32.0	53.3	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1100	32.0	54.4	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1200	32.0	55.5	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1300	32.0	57.4	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1400	32.0	60.4	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1500	32.0	57.6	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1600	32.0	58.3	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1700	32.0	61.5	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1800	32.0	49.5	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1900	32.0	40.1	32.0	32.0	32.0	32.0	32.0	32.0	32.0
2000	32.0	37.8	32.0	32.0	32.0	32.0	32.0	32.0	32.0
2100	32.0	37.1	32.0	32.0	32.0	32.0	32.0	32.0	32.0
2200	32.0	36.8	32.0	32.0	32.0	32.0	32.0	32.0	32.0
2300	32.0	37.2	32.0	32.0	32.0	32.0	32.0	32.0	32.0
2400	32.0	37.4	32.0	32.0	32.0	32.0	32.0	32.0	32.0

TABLE 50. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 22, 1979

COOLING CANAL COLD DISCHARGE		UPSTREAM INTAKE		DOWNSTREAM SENSORS		DISCHARGE		DOWNSTREAM SENSORS	
TIME	UPSTREAM	INTAKE	A	B	C	END	A	B	C
100	32.0	36.8	32.0	32.0	32.0	32.0	32.0	32.0	32.0
200	32.0	36.7	32.0	32.0	32.0	32.0	32.0	32.0	32.0
300	32.0	36.2	32.0	32.0	32.0	32.0	32.0	32.0	32.0
400	32.0	37.2	32.0	32.0	32.0	32.0	32.0	32.0	32.0
500	32.0	36.2	32.0	32.0	32.0	32.0	32.0	32.0	32.0
600	32.0	36.3	32.0	32.0	32.0	32.0	32.0	32.0	32.0
700	32.0	36.3	32.0	32.0	32.0	32.0	32.0	32.0	32.0
800	32.0	36.3	32.0	32.0	32.0	32.0	32.0	32.0	32.0
900	32.0	36.2	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1000	32.0	36.2	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1100	32.0	36.6	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1200	32.0	36.7	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1300	32.0	37.7	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1400	32.0	36.5	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1500	32.0	37.5	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1600	32.0	37.5	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1700	32.0	37.5	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1800	32.0	38.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
1900	32.0	37.4	32.0	32.0	32.0	32.0	32.0	32.0	32.0
2000	32.0	34.7	32.0	32.0	32.0	32.0	32.0	32.0	32.0
2100	32.0	33.8	32.0	32.0	32.0	32.0	32.0	32.0	32.0
2200	32.0	34.1	32.0	32.0	32.0	32.0	32.0	32.0	32.0
2300	32.0	33.9	32.0	32.0	32.0	32.0	32.0	32.0	32.0
2400	32.0	34.2	32.0	32.0	32.0	32.0	32.0	32.0	32.0

TABLE 51. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 23, 1979

COOLING CANAL COLD DISCHARGE		UPSTREAM INTAKE		DOWNSTREAM SENSORS		DISCHARGE		DOWNSTREAM SENSORS	
TIME	UPSTREAM	INTAKE	A	B	C	END	A	B	C
100	32.5	34.4	32.0	32.5	32.4	32.4	32.5	33.3	33.3
200	32.5	34.5	32.0	32.5	32.5	32.5	32.5	33.5	33.5
300	32.5	36.7	32.0	32.8	32.5	32.5	32.4	33.3	33.2
400	32.7	34.5	32.2	32.8	32.5	32.5	32.1	33.2	33.5
500	32.0	34.5	32.2	32.7	32.6	32.6	32.2	33.3	33.2
600	32.3	37.5	32.4	32.7	32.7	32.7	32.2	33.3	33.4
700	32.4	34.8	32.5	32.0	33.0	33.0	32.4	33.3	33.5
800	32.6	35.2	32.5	33.3	33.0	33.0	32.2	33.3	33.5
900	33.0	34.9	32.4	33.3	33.3	33.3	32.2	33.3	33.5
1000	33.2	42.7	32.5	33.5	33.5	33.5	32.2	33.5	33.6
1100	33.4	43.2	32.5	32.5	33.5	33.5	32.2	33.5	33.6
1200	33.3	38.8	32.5	33.5	32.5	32.5	32.0	33.5	33.5
1300	33.7	36.3	32.7	33.8	32.7	32.7	32.0	33.5	33.5
1400	33.7	35.6	32.7	33.8	33.9	33.9	32.2	33.5	33.7
1500	33.8	36.3	32.7	34.0	34.0	34.0	32.2	33.5	33.7
1600	33.4	36.7	32.7	34.0	34.0	34.0	32.2	33.5	33.7
1700	33.6	38.2	32.9	34.3	34.2	34.2	32.2	33.5	33.7
1800	33.4	35.6	32.8	34.2	34.0	34.0	32.2	33.5	33.7
1900	33.3	42.6	32.8	34.2	34.2	34.2	32.2	33.5	33.6
2000	33.6	41.2	32.7	34.2	34.3	34.3	32.2	33.5	33.7
2100	33.7	36.7	32.8	34.1	34.2	34.2	32.0	33.3	33.7
2200	33.7	36.8	32.7	34.0	34.0	34.0	32.0	33.3	33.7
2300	33.1	43.0	32.9	33.9	33.9	33.9	32.0	33.3	33.7
2400	33.0	34.2	32.7	33.7	33.6	33.6	32.0	33.3	33.7

TABLE 52. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 24, 1979

COOLING CANAL COLD DISCHARGE		UPSTREAM INTAKE		DOWNSTREAM SENSORS		DISCHARGE		DOWNSTREAM SENSORS	
TIME	UPSTREAM	INTAKE	A	B	C	END	A	B	C
100	32.6	41.8	32.6	32.6	32.6	32.6	32.5	33.5	33.3
200	32.5	32.5	32.5	32.5	32.5	32.5	32.3	32.5	33.3
300	32.6	40.8	32.6	32.6	32.6	32.6	32.4	33.3	33.2
400	32.4	32.4	32.4	32.4	32.4	32.4	32.1	33.2	33.5
500	32.5	32.5	32.5	32.5	32.5	32.5	32.2	33.3	33.2
600	32.5	32.5	32.5	32.5	32.5	32.5	32.2	33.3	33.4
700	32.3	32.3	32.3	32.3	32.3	32.3	32.4	33.3	33.5
800	32.3	32.3	32.3	32.3	32.3	32.3	32.2	33.3	33.5
900	32.3	32.2	32.3	32.2	32.2	32.2	32.2	33.3	33.5
1000	32.2	32.2	32.2	32.2	32.2	32.2	32.2	33.5	33.6
1100	32.4	32.4	32.4	32.4	32.4	32.4	32.2	33.5	33.6
1200	32.4	32.4	32.4	32.4	32.4	32.4	32.0	33.5	33.5
1300	32.2	32.2	32.2	32.2	32.2	32.2	32.0	33.5	33.5
1400	32.0	32.0	32.0	32.0	32.0	32.0	32.2	33.4	33.7
1500	32.0	32.0	32.0	32.0	32.0	32.0	32.2	33.5	33.7
1600	32.5	32.5	32.5	32.5	32.5	32.5	32.3	33.5	33.7
1700	32.5	32.5	32.5	32.5	32.5	32.5	32.2	33.5	33.7
1800	32.3	32.3	32.3	32.3	32.3	32.3	32.2	33.5	33.6
1900	32.3	32.3	32.3	32.3	32.3	32.3	32.2	33.5	33.6
2000	32.1	32.1	32.1	32.1	32.1	32.1	32.0	33.3	33.7
2100	32.1	32.1	32.1	32.1	32.1	32.1	32.0	33.3	33.7
2200	32.0	32.0	32.0	32.0	32.0	32.0	32.0	33.3	33.7
2300	32.1	32.1	32.1	32.1	32.1	32.1	32.0	33.3	33.7
2400	32.2	32.2	32.2	32.2	32.2	32.2	32.0	33.3	33.7

9999 OR 9999 -- INSTANTANEOUS WAFUNCTION

TABLE 53. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 25, 1979

TIME	COOLING				---DOWNSTREAM SENSORS---				---DOWNSTREAM SENSORS---								
	UPSTREAM	INTAKE	CANAL		A	B	C	D	A	B	C	D					
			COLD	DISCHARGE									END	DISCHARGE			
100	32.2	32.0	0909	0909	32.0	32.3	33.6	0909	100	32.6	32.7	0909	0909	32.2	33.2	33.5	0909
200	32.1	32.0	0909	0909	32.0	32.2	33.5	0909	200	32.6	32.7	0909	0909	32.2	33.2	33.5	0909
300	32.0	32.0	0909	0909	32.0	32.3	33.3	0909	300	32.7	32.8	0909	0909	32.2	33.2	33.5	0909
400	32.0	32.1	0909	0909	32.0	32.0	33.0	0909	400	32.1	32.1	0909	0909	32.2	33.2	33.2	0909
500	32.0	32.2	0909	0909	32.0	32.9	33.0	0909	500	32.6	32.6	0909	0909	32.2	33.2	33.2	0909
600	32.0	32.2	0909	0909	32.0	32.8	32.8	0909	600	32.5	32.8	0909	0909	32.1	33.2	33.2	0909
700	32.0	32.2	0909	0909	32.0	32.8	32.8	0909	700	32.5	32.9	0909	0909	32.0	33.0	33.2	0909
800	32.0	32.1	0909	0909	32.0	32.7	32.7	0909	800	32.5	32.9	0909	0909	32.0	33.0	33.0	0909
900	32.0	32.0	0909	0909	32.0	32.5	32.5	0909	900	32.5	32.7	0909	0909	32.0	32.9	33.0	0909
1000	32.0	32.0	0909	0909	32.0	32.5	32.5	0909	1000	32.4	32.7	0909	0909	32.0	32.8	33.0	0909
1100	32.0	32.0	0909	0909	32.0	32.5	32.6	0909	1100	32.5	33.0	0909	0909	32.0	33.0	33.0	0909
1200	32.0	32.0	0909	0909	32.0	32.5	32.5	0909	1200	32.5	33.1	0909	0909	32.0	33.0	33.0	0909
1300	32.0	32.0	0909	0909	32.0	32.6	32.5	0909	1300	32.5	32.7	0909	0909	32.0	32.9	33.2	0909
1400	32.0	32.0	0909	0909	32.0	32.7	32.7	0909	1400	32.5	32.7	0909	0909	32.0	33.0	33.2	0909
1500	32.0	32.0	0909	0909	32.0	32.7	32.7	0909	1500	32.5	32.8	0909	0909	32.0	33.0	33.2	0909
1600	32.0	32.0	0909	0909	32.0	32.8	32.7	0909	1600	32.5	32.8	0909	0909	32.0	33.0	33.2	0909
1700	32.0	32.0	0909	0909	32.0	32.8	32.7	0909	1700	32.5	32.9	0909	0909	32.0	33.0	33.3	0909
1800	32.0	32.0	0909	0909	32.0	32.6	32.6	0909	1800	32.5	32.7	0909	0909	32.0	33.0	33.4	0909
1900	32.0	32.0	0909	0909	32.0	32.6	32.7	0909	1900	32.5	32.7	0909	0909	32.2	33.0	33.5	0909
2000	32.0	32.0	0909	0909	32.0	32.7	32.8	0909	2000	32.5	32.7	0909	0909	32.2	33.0	33.3	0909
2100	32.0	32.0	0909	0909	32.0	32.7	32.8	0909	2100	32.5	32.7	0909	0909	32.2	33.0	33.5	0909
2200	32.1	32.1	0909	0909	32.0	33.0	33.3	0909	2200	32.5	32.8	0909	0909	32.2	33.0	33.5	0909
2300	32.1	32.2	0909	0909	32.4	33.0	33.5	0909	2300	32.5	32.7	0909	0909	32.3	33.1	33.5	0909
2400	32.5	32.0	0909	0909	32.2	33.2	33.5	0909	2400	32.7	32.7	0909	0909	32.4	33.2	33.5	0909

TABLE 54. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MARCH 27, 1979

TIME	COOLING				---DOWNSTREAM SENSORS---				---DOWNSTREAM SENSORS---								
	UPSTREAM	INTAKE	CANAL		A	B	C	D	A	B	C	D					
			COLD	DISCHARGE									END	DISCHARGE			
100	32.7	33.5	0909	0909	32.4	33.1	33.5	0909	100	33.7	33.6	0909	0909	33.2	33.8	34.7	0909
200	32.5	33.5	0909	0909	32.4	33.2	33.6	0909	200	34.0	33.9	0909	0909	33.3	34.0	34.7	0909
300	32.7	33.3	0909	0909	32.3	33.0	33.6	0909	300	34.2	33.9	0909	0909	33.3	34.0	34.8	0909
400	32.7	33.3	0909	0909	32.3	33.0	33.5	0909	400	34.2	34.8	0909	0909	33.4	34.0	34.7	0909
500	32.5	33.2	0909	0909	32.2	32.9	33.3	0909	500	34.4	34.8	0909	0909	33.4	34.0	34.8	0909
600	32.5	33.2	0909	0909	32.2	32.7	33.2	0909	600	34.2	34.5	0909	0909	33.4	34.0	34.8	0909
700	32.4	33.2	0909	0909	32.0	32.5	33.1	0909	700	34.0	34.0	0909	0909	33.5	34.0	34.3	0909
800	32.2	32.6	0909	0909	32.0	32.5	33.0	0909	800	33.8	34.0	0909	0909	33.2	33.7	34.2	0909
900	32.4	32.9	0909	0909	32.0	32.6	33.0	0909	900	33.6	33.4	0909	0909	33.2	33.7	34.2	0909
1000	32.3	32.9	0909	0909	32.0	32.5	33.2	0909	1000	33.4	33.3	0909	0909	33.2	33.7	34.2	0909
1100	32.5	33.2	0909	0909	32.2	32.7	33.1	0909	1100	33.4	33.2	0909	0909	33.1	33.5	34.0	0909
1200	32.5	33.4	0909	0909	32.3	32.7	33.3	0909	1200	33.6	33.2	0909	0909	33.0	33.6	33.8	0909
1300	32.7	33.7	0909	0909	32.4	32.8	33.4	0909	1300	33.7	33.3	0909	0909	32.8	33.7	33.8	0909
1400	32.6	33.8	0909	0909	32.4	32.7	33.2	0909	1400	33.7	33.2	0909	0909	33.0	33.8	33.8	0909
1500	33.3	34.1	0909	0909	32.2	32.6	33.3	0909	1500	34.0	33.4	0909	0909	33.0	33.9	34.0	0909
1600	33.0	33.2	0909	0909	32.3	33.0	33.5	0909	1600	34.0	33.7	0909	0909	33.2	34.0	34.0	0909
1700	33.0	33.7	0909	0909	32.4	33.0	33.5	0909	1700	34.0	34.3	0909	0909	33.2	34.1	34.2	0909
1800	33.0	33.2	0909	0909	32.4	33.0	33.5	0909	1800	34.1	33.8	0909	0909	33.2	34.0	34.2	0909
1900	33.0	33.0	0909	0909	32.5	33.2	33.7	0909	1900	34.1	34.8	0909	0909	33.3	34.2	34.5	0909
2000	33.2	33.2	0909	0909	32.7	33.2	34.0	0909	2000	34.1	34.7	0909	0909	33.3	34.3	34.6	0909
2100	33.2	33.1	0909	0909	32.7	33.2	34.0	0909	2100	34.1	34.7	0909	0909	33.5	34.3	34.6	0909
2200	33.5	33.5	0909	0909	32.9	33.5	34.3	0909	2200	34.3	34.3	0909	0909	33.5	34.3	34.6	0909
2300	33.5	33.4	0909	0909	32.9	33.5	34.5	0909	2300	34.3	35.0	0909	0909	33.5	34.3	34.7	0909
2400	33.7	33.4	0909	0909	33.2	33.7	34.6	0909	2400	34.3	35.0	0909	0909	33.6	34.3	34.8	0909

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TABLE 57. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, MARCH 29, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	34.5	35.4	73.0	90.0	33.7	34.4	34.8	*9999
200	34.5	35.3	73.5	89.7	33.6	34.3	34.8	*9999
300	34.3	35.5	73.3	89.7	33.7	34.6	34.0	*9999
400	34.6	35.7	73.3	89.8	33.5	34.6	34.7	*9999
500	34.5	35.7	73.0	89.9	33.5	34.5	34.7	*9999
600	34.7	35.7	72.5	89.8	33.5	34.5	34.7	*9999
700	34.7	35.8	72.2	89.3	33.7	34.5	34.5	*9999
800	34.2	35.8	72.0	89.2	34.0	34.6	35.0	*9999
900	34.4	35.9	72.6	89.0	33.9	34.5	35.0	*9999
1000	33.8	35.1	72.7	90.5	33.8	34.5	35.0	*9999
1100	34.3	35.2	72.3	89.3	33.8	34.3	35.0	*9999
1200	34.2	35.2	71.5	88.5	33.8	34.4	35.0	*9999
1300	34.6	35.0	71.9	88.7	33.8	34.3	35.0	*9999
1400	34.2	35.0	73.2	88.5	33.7	34.3	35.0	*9999
1500	34.9	35.0	74.2	88.5	34.0	34.3	35.2	*9999
1600	34.5	35.0	74.7	89.8	34.0	34.5	35.3	*5555
1700	34.5	35.0	74.6	88.2	34.0	34.5	35.3	*9999
1800	34.3	34.8	75.3	88.8	34.0	34.5	35.4	*9999
1900	34.0	35.0	75.5	89.7	34.2	34.3	35.5	*9999
2000	34.8	35.1	76.7	90.3	33.8	34.5	35.5	*9999
2100	35.3	35.5	76.6	90.6	33.7	34.7	35.3	*9999
2200	35.3	35.6	76.2	90.3	33.7	34.5	35.5	*9999
2300	35.7	35.8	75.0	90.7	33.8	34.8	35.7	*9999
2400	35.8	36.5	75.7	90.3	34.0	35.0	35.9	*9999

TABLE 58. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, MARCH 30, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	36.0	37.0	75.3	90.4	34.1	35.1	36.1	*9999
200	36.2	36.8	75.3	90.0	34.2	35.2	36.4	*9999
300	36.3	36.7	75.2	90.4	34.3	35.3	36.4	*9999
400	36.4	37.0	75.3	90.7	34.2	35.3	36.4	*9999
500	36.4	37.2	75.5	91.0	34.3	35.3	36.4	*9999
600	36.5	37.3	75.8	91.2	34.5	35.4	36.7	*9999
700	36.7	37.3	75.9	91.9	34.4	35.5	36.7	*9999
800	36.6	37.5	75.3	91.9	34.5	35.4	36.7	*9999
900	35.6	38.5	76.3	92.5	34.7	35.5	36.8	*9999
1000	37.0	39.0	76.3	92.2	34.8	35.7	36.8	*9999
1100	37.3	38.8	76.7	92.8	35.0	35.8	37.0	*9999
1200	37.6	39.7	77.3	93.5	35.2	35.8	37.2	*9999
1300	37.7	39.5	76.5	91.0	35.5	35.7	37.3	*9999
1400	38.2	40.0	76.3	92.1	35.4	35.7	37.3	*9999
1500	38.4	40.2	75.4	92.2	35.3	35.8	37.3	*9999
1600	38.3	41.7	75.0	92.0	35.4	35.8	37.2	*9999
1700	38.3	41.7	74.3	91.1	35.4	35.8	37.2	*9999
1800	38.3	41.8	73.0	90.5	35.5	35.7	37.3	*9999
1900	38.3	41.8	72.4	89.9	35.5	35.9	37.4	*9999
2000	38.4	41.8	72.0	90.0	35.7	36.0	37.7	*9999
2100	38.5	41.8	71.9	89.2	35.7	36.0	38.0	*9999
2200	38.6	42.0	71.5	89.8	35.8	36.2	38.0	*9999
2300	38.6	42.0	71.3	89.0	35.8	36.2	38.2	*9999
2400	38.7	42.2	70.9	89.2	35.9	36.3	38.2	*9999

TABLE 59. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, MARCH 31, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	38.7	42.2	71.0	89.3	35.6	36.3	38.0	*9999
200	38.5	42.3	71.3	89.7	35.8	36.4	38.1	*9999
300	38.5	42.4	71.4	89.7	35.7	36.5	38.0	*9999
400	38.6	42.3	71.3	89.7	35.7	36.7	37.8	*9999
500	38.5	42.3	71.5	89.8	35.5	36.5	37.8	*9999
600	38.3	42.2	71.5	89.8	35.4	36.5	37.8	*9999
700	38.2	42.1	71.5	89.8	35.4	36.6	37.8	*9999
800	38.2	42.0	71.7	89.7	35.2	36.7	37.4	*9999
900	38.0	41.8	71.8	90.2	35.3	36.7	37.2	*9999
1000	38.0	41.8	71.7	90.2	35.2	36.6	37.0	*9999
1100	38.0	41.9	72.0	90.2	35.2	36.5	37.0	*9999
1200	38.0	41.7	72.0	90.6	35.2	36.5	37.2	*9999
1300	37.9	41.7	72.0	90.0	35.0	36.5	37.2	*9999
1400	38.0	41.8	72.2	90.3	35.0	36.6	37.4	*9999
1500	37.8	41.7	72.0	91.8	35.0	36.6	37.6	*9999
1600	37.8	41.7	72.0	91.9	35.0	36.5	37.6	*9999
1700	37.8	41.6	72.0	90.4	35.0	36.5	37.6	*9999
1800	37.8	41.5	71.7	90.6	35.0	36.6	37.7	*9999
1900	37.8	41.3	71.8	90.4	35.0	36.5	37.8	*9999
2000	37.8	41.3	71.8	91.8	35.0	36.5	37.9	*9999
2100	37.8	41.2	72.0	90.3	35.0	36.5	37.9	*9999
2200	37.8	41.0	71.8	90.5	35.0	36.6	38.0	*9999
2300	37.7	41.0	71.8	90.8	35.2	36.7	37.7	*9999
2400	37.7	40.8	71.6	89.0	35.2	36.6	37.6	*9999

\*9999 OR 9999 -- INSTRUMENT MALFUNCTION

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TABLE 60. DAILY WATER TEMPERATURE (F) DATA,  
QUAO-CITIES STATION, APRIL 1, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	37.5	40.8	71.5	81.7	37.0	36.6	37.7	*9999
200	37.6	40.8	71.3	81.7	36.9	36.5	37.7	*9999
300	37.5	40.7	71.0	80.4	37.0	36.5	37.8	*9999
400	37.3	40.5	71.0	82.2	36.8	36.6	37.7	*9999
500	37.3	40.5	70.0	82.1	36.8	36.5	37.5	*9999
600	37.2	40.5	68.7	82.3	36.8	36.6	37.3	*9999
700	37.2	40.3	67.0	82.3	36.8	36.6	37.2	*9999
800	37.1	40.2	66.4	82.5	36.8	36.7	37.2	*9999
900	37.0	40.0	67.0	83.0	36.7	36.6	37.0	*9999
1000	37.0	40.0	67.5	82.5	36.5	36.6	37.0	*9999
1100	36.5	39.9	67.8	82.8	36.5	36.4	37.1	*9999
1200	36.6	39.8	67.6	82.7	36.4	36.5	37.0	*9999
1300	36.5	40.0	67.6	82.7	36.3	36.5	37.0	*9999
1400	36.3	40.2	68.3	82.0	36.4	36.0	37.1	*9999
1500	36.3	40.0	68.8	82.1	36.3	35.7	37.0	*9999
1600	36.2	40.0	69.0	82.4	36.5	35.5	37.1	*9999
1700	36.3	39.8	68.7	82.4	36.3	35.5	36.7	*9999
1800	36.2	39.7	68.3	82.1	36.3	34.7	36.5	*9999
1900	36.2	39.3	68.3	82.1	36.3	35.2	36.5	*9999
2000	36.3	39.2	68.5	82.0	36.3	35.3	36.5	*9999
2100	36.2	39.2	68.8	82.8	36.2	35.2	36.5	*9999
2200	36.8	39.0	69.2	82.4	36.3	35.2	36.8	*9999
2300	36.2	39.0	69.2	81.8	36.3	35.3	36.7	*9999
2400	36.2	38.8	69.7	81.9	36.3	35.0	36.5	*9999

TABLE 61. DAILY WATER TEMPERATURE (F) DATA,  
QUAO-CITIES STATION, APRIL 2, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	36.2	36.1	70.0	82.4	36.3	35.0	36.3	*9999
200	36.0	36.0	70.2	82.8	36.2	35.0	36.3	*9999
300	36.0	35.9	70.0	82.9	36.1	35.0	36.2	*9999
400	36.0	35.6	70.2	82.8	36.2	34.9	36.0	*9999
500	35.9	35.4	70.2	82.6	36.0	34.8	36.0	*9999
600	35.6	35.2	70.8	82.8	36.0	34.8	35.8	*9999
700	35.6	35.2	70.8	82.6	35.9	34.5	35.8	*9999
800	35.7	35.2	70.8	83.0	35.8	34.5	35.7	*9999
900	35.5	35.1	70.8	83.1	35.7	34.7	35.8	*9999
1000	35.6	34.9	70.4	82.9	35.7	34.7	35.7	*9999
1100	35.7	34.9	70.2	82.8	35.7	34.7	35.5	*9999
1200	35.5	34.9	70.2	82.5	35.7	34.7	35.5	*9999
1300	35.3	35.0	70.0	82.8	35.5	34.8	35.2	*9999
1400	35.2	35.1	70.0	82.8	35.7	34.8	35.2	*9999
1500	35.3	35.3	70.0	82.8	35.5	34.9	35.0	*9999
1600	35.2	35.4	69.9	82.6	35.5	34.8	35.0	*9999
1700	35.3	35.4	70.0	82.1	35.5	34.8	34.9	*9999
1800	35.4	35.6	70.0	82.4	35.5	34.9	35.0	*9999
1900	35.5	35.8	69.9	83.1	35.7	35.0	35.2	*9999
2000	35.5	35.6	69.8	82.9	35.7	35.0	35.1	*9999
2100	35.5	35.6	70.2	82.9	35.8	35.2	35.5	*9999
2200	35.5	35.6	70.5	83.1	35.8	35.2	35.5	*9999
2300	35.5	35.4	70.7	83.3	35.8	35.2	35.5	*9999
2400	35.5	35.4	70.5	82.9	35.8	35.2	35.6	*9999

TABLE 62. DAILY WATER TEMPERATURE (F) DATA,  
QUAO-CITIES STATION, APRIL 3, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	35.5	35.4	70.2	82.7	35.8	35.0	35.5	*9999
200	35.3	35.3	70.2	82.8	35.7	34.9	35.3	*9999
300	35.3	35.3	70.2	82.9	35.7	34.8	35.3	*9999
400	35.2	35.2	70.4	82.8	35.5	34.7	35.1	*9999
500	35.2	35.0	70.4	82.6	35.5	34.8	35.0	*9999
600	35.0	34.6	70.3	82.5	35.4	34.5	34.8	*9999
700	35.0	35.0	70.3	82.6	36.1	34.5	35.0	*9999
800	35.0	35.1	70.2	83.1	35.1	34.4	34.8	*9999
900	34.9	35.0	70.4	83.8	35.3	34.4	35.0	*9999
1000	35.0	35.2	70.7	84.4	35.3	34.2	34.8	*9999
1100	35.2	35.4	71.3	84.8	35.5	34.5	35.0	*9999
1200	35.4	35.6	72.0	84.9	35.5	34.7	35.1	*9999
1300	35.5	35.8	72.5	84.9	35.5	34.8	35.2	*9999
1400	35.7	35.1	72.8	85.8	36.2	34.8	35.2	*9999
1500	35.7	36.1	73.2	87.4	35.6	35.0	35.7	*9999
1600	35.7	36.2	73.0	87.5	35.7	*9999	35.8	*9999
1700	35.8	36.2	73.2	87.9	35.8	*9999	35.8	*9999
1800	36.0	36.3	73.0	87.8	*9999	*9999	36.5	*9999
1900	36.0	36.1	73.0	86.5	36.2	*9999	36.3	*9999
2000	36.1	36.2	73.2	87.7	36.3	*9999	36.7	*9999
2100	36.3	36.4	73.0	87.9	36.5	*9999	37.0	*9999
2200	36.5	36.6	73.0	86.3	36.5	*9999	37.0	*9999
2300	36.7	36.6	72.8	84.4	36.8	*9999	37.2	*9999
2400	36.7	36.8	72.7	82.8	36.7	*9999	36.8	*9999

\*9999 OR 999. -- INSTRUMENT MALFUNCTION

TABLE 63. DAILY WATER TEMPERATURE (F) DATA,  
QUAO-CITIES STATION, APRIL 4, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	36.8	36.9	72.5	81.3	36.7	*9999	36.7	*9999
200	36.7	37.0	72.3	82.9	36.5	*9999	36.8	*9999
300	36.6	36.9	72.1	83.4	36.4	*9999	36.7	*9999
400	36.6	37.0	71.3	84.6	36.3	*9999	36.5	*9999
500	36.5	36.9	70.6	83.6	36.3	*9999	36.5	*9999
600	36.5	36.9	70.1	83.3	36.3	*9999	36.5	*9999
700	36.5	36.8	70.7	83.2	36.2	*9999	36.6	*9999
800	36.5	36.9	70.8	83.9	36.2	*9999	36.7	*9999
900	36.5	36.8	71.4	84.4	36.3	*9999	36.1	*9999
1000	36.5	36.9	71.2	84.6	36.1	*9999	36.0	*9999
1100	36.3	37.0	71.3	84.6	37.0	*9999	36.2	*9999
1200	36.6	37.1	71.3	84.9	36.2	*9999	36.7	*9999
1300	36.6	37.2	72.2	85.0	36.2	*9999	36.7	*9999
1400	36.7	37.0	72.7	85.2	36.4	*9999	35.5	*9999
1500	36.7	37.1	72.7	85.7	37.0	*9999	35.3	*9999
1600	36.5	37.1	72.8	86.3	37.6	*9999	35.5	*9999
1700	36.5	37.0	72.8	85.6	*9999	*9999	37.5	*9999
1800	36.5	37.2	72.8	85.4	*9999	*9999	36.5	*9999
1900	36.6	37.2	72.2	85.4	*9999	*9999	35.5	*9999
2000	36.2	37.1	72.4	85.6	*9999	*9999	35.0	*9999
2100	37.4	37.4	73.5	86.0	*9999	*9999	*9999	*9999
2200	36.4	37.2	73.3	85.7	*9999	*9999	*9999	*9999
2300	36.0	37.2	73.4	86.8	*9999	*9999	*9999	*9999
2400	35.3	37.3	73.7	86.7	*9999	*9999	*9999	*9999

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TABLE 64. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 5, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	35.4	37.3	73.6	86.8	9999	9999	9999	9999
200	35.9	37.4	73.7	86.2	9999	9999	9999	9999
300	36.0	37.3	73.4	86.0	36.5	9999	9999	9999
400	36.2	37.3	73.5	86.4	38.4	9999	9999	9999
500	36.0	37.3	73.4	85.6	39.4	9999	9999	9999
600	35.9	37.4	73.3	85.5	39.4	9999	9999	9999
700	36.3	37.0	72.0	85.3	39.3	9999	9999	9999
800	36.7	37.2	72.7	85.0	38.5	9999	9999	9999
900	36.9	37.3	72.3	85.0	38.7	9999	9999	9999
1000	37.0	37.4	72.5	84.8	39.2	9999	9999	9999
1100	37.2	37.7	71.9	86.0	38.3	9999	9999	9999
1200	37.5	38.0	71.7	84.7	38.8	9999	9999	9999
1300	37.7	38.3	72.0	85.8	38.7	9999	9999	9999
1400	37.8	38.5	71.5	86.0	39.0	9999	9999	9999
1500	36.0	38.7	70.7	84.8	9999	9999	9999	9999
1600	37.7	38.3	69.2	81.4	39.0	9999	9999	9999
1700	37.7	38.0	67.0	79.5	39.5	9999	9999	9999
1800	37.6	37.7	63.5	78.2	39.0	9999	9999	9999
1900	37.3	37.3	61.1	76.8	39.5	9999	9999	9999
2000	37.2	37.2	63.5	74.9	39.8	9999	9999	9999
2100	37.2	37.0	59.8	74.0	39.7	9999	9999	9999
2200	37.0	36.8	59.7	73.8	39.5	9999	9999	9999
2300	37.0	36.5	59.5	73.4	39.3	9999	9999	9999
2400	36.6	36.5	59.7	73.5	39.2	9999	9999	9999

TABLE 65. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 6, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	36.3	36.2	59.4	72.7	39.3	9999	9999	9999
200	36.2	36.0	59.7	71.0	39.1	9999	9999	9999
300	36.2	35.7	60.2	73.2	38.6	9999	9999	9999
400	34.7	35.3	60.4	74.3	38.6	9999	9999	9999
500	35.4	35.0	61.0	74.8	38.1	9999	9999	9999
600	35.3	34.7	61.2	74.2	37.8	9999	9999	9999
700	35.0	34.3	60.9	73.7	37.6	9999	9999	9999
800	34.8	34.0	61.7	76.3	37.0	9999	9999	9999
900	34.2	33.6	62.2	76.7	37.4	9999	9999	9999
1000	34.5	34.0	63.0	77.1	37.4	9999	9999	9999
1100	35.0	34.5	65.3	79.2	37.9	9999	9999	9999
1200	35.0	34.3	65.2	79.2	37.9	9999	9999	9999
1300	35.1	34.9	66.0	80.0	37.9	9999	9999	9999
1400	35.1	35.0	67.6	80.5	38.0	9999	9999	9999
1500	35.4	35.0	68.2	81.6	38.1	9999	37.0	9999
1600	35.5	35.0	69.0	82.4	38.0	9999	37.5	9999
1700	35.5	33.5	69.5	82.0	38.0	35.6	38.0	9999
1800	35.5	34.2	69.5	82.5	38.3	35.6	38.2	9999
1900	35.5	35.0	69.6	83.0	38.3	35.9	37.9	9999
2000	35.6	34.7	69.8	83.5	38.4	36.1	38.8	9999
2100	35.7	34.6	70.0	83.0	38.7	36.2	38.5	9999
2200	35.7	34.9	70.2	83.0	38.8	36.4	38.5	9999
2300	36.0	35.0	70.5	83.0	38.9	36.6	37.1	9999
2400	36.1	35.0	70.5	83.0	38.9	36.6	39.4	9999

TABLE 66. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 7, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	36.2	35.2	70.5	83.4	38.9	36.8	37.9	9999
200	36.3	35.4	70.5	82.5	38.9	36.9	37.6	9999
300	36.4	35.3	70.6	83.6	38.9	37.0	38.0	9999
400	36.5	35.5	70.6	81.6	38.9	36.9	38.1	9999
500	36.4	35.5	70.5	76.9	38.7	36.6	37.9	9999
600	36.2	35.5	70.4	76.5	38.6	36.6	37.6	9999
700	36.1	35.4	70.6	75.0	38.4	36.5	37.4	9999
800	36.1	35.1	70.1	76.1	38.4	36.4	36.9	9999
900	36.0	35.4	68.9	74.1	38.4	36.4	37.5	9999
1000	36.0	35.5	66.7	74.5	38.4	36.4	37.6	9999
1100	36.3	35.6	66.2	72.0	38.3	36.6	38.3	9999
1200	36.5	36.0	65.9	73.0	38.6	36.6	38.5	9999
1300	36.5	36.3	66.1	72.0	38.5	36.6	38.9	9999
1400	36.7	36.6	65.5	73.3	38.8	36.8	38.5	9999
1500	37.0	37.0	65.7	72.2	38.9	37.0	38.5	9999
1600	37.0	37.2	65.2	73.0	38.9	37.1	38.3	9999
1700	37.2	37.2	65.5	71.8	38.9	37.2	38.4	9999
1800	37.2	37.1	65.9	73.7	38.9	37.1	38.5	9999
1900	37.2	37.2	66.0	73.3	38.9	37.2	38.4	9999
2000	37.4	37.2	65.4	73.4	38.9	37.2	38.5	9999
2100	37.4	37.3	65.3	71.5	38.9	37.5	38.1	9999
2200	37.5	37.4	64.9	72.5	38.9	37.6	39.5	9999
2300	37.5	37.4	65.0	71.3	38.9	37.9	39.3	9999
2400	37.5	37.3	64.8	70.5	39.4	37.9	39.4	9999

TABLE 67. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 8, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	37.6	37.4	65.0	71.9	39.4	37.9	37.3	9999
200	37.6	37.5	65.0	71.7	38.7	38.1	37.6	9999
300	37.6	37.5	65.7	72.5	38.8	37.9	37.7	9999
400	37.5	37.5	65.7	72.6	38.4	37.8	38.0	9999
500	37.5	37.4	66.3	73.2	38.4	37.8	37.5	9999
600	37.3	37.5	66.5	73.5	38.4	37.7	37.7	9999
700	37.3	37.5	66.8	73.5	38.2	37.6	37.9	9999
800	37.5	37.5	66.8	75.0	38.1	37.6	37.9	9999
900	37.5	37.4	67.2	75.7	38.0	37.6	37.4	9999
1000	37.5	37.5	67.3	79.9	38.0	37.6	37.8	9999
1100	37.5	37.5	67.7	79.5	37.9	37.6	37.8	9999
1200	37.7	37.8	67.5	79.7	38.0	37.6	38.5	9999
1300	37.9	38.1	68.0	81.0	38.2	37.8	38.1	9999
1400	38.0	38.4	68.9	83.0	38.3	38.0	38.0	9999
1500	9999	38.5	69.5	82.2	9999	39.4	38.0	9999
1600	9999	38.3	70.0	84.2	9999	39.6	38.0	9999
1700	9999	38.4	70.2	84.4	37.9	39.5	39.6	9999
1800	9999	38.4	70.5	83.1	38.4	38.3	38.9	9999
1900	9999	38.4	70.7	83.3	38.4	38.4	38.9	9999
2000	9999	38.5	71.5	83.5	38.4	38.6	38.0	9999
2100	9999	38.5	71.6	84.9	38.7	38.7	37.9	9999
2200	9999	38.5	71.5	84.4	38.8	38.8	38.0	9999
2300	9999	38.5	71.4	84.5	38.9	39.0	38.1	9999
2400	9999	38.6	71.5	84.2	38.7	39.0	38.5	9999

9999 OR 9999 -- INSTRUMENT MALFUNCTION

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TABLE 68. DAILY WATER TEMPERATURE (F) DATA.  
 QUAD-CITIES STATION, APRIL 9, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD	DISCHARGE	A	B	C	D
100	*9999	38.6	71.1	84.0	38.0	39.8	37.7	*9999
200	*9999	38.6	71.1	83.9	38.6	38.7	37.8	*9999
300	*9999	38.5	71.0	84.1	38.5	38.6	37.9	*9999
400	*9999	38.5	70.9	83.9	38.4	38.6	37.5	*9999
500	*9999	38.5	70.7	83.7	38.4	38.6	37.8	*9999
600	*9999	38.5	70.5	84.1	38.2	38.4	37.7	*9999
700	*9999	38.5	70.5	84.0	38.4	38.3	37.7	*9999
800	*9999	38.5	70.5	85.2	38.3	38.2	37.7	*9999
900	*9999	38.5	70.5	85.2	37.9	38.1	37.9	*9999
1000	*9999	38.4	70.6	85.3	37.9	38.1	38.0	*9999
1100	*9999	38.5	71.0	85.6	38.1	38.1	37.9	*9999
1200	*9999	38.5	71.5	86.0	38.0	38.1	38.0	*9999
1300	*9999	38.5	71.6	85.5	38.0	38.1	37.9	*9999
1400	*9999	38.5	72.0	86.3	38.0	38.1	37.7	*9999
1500	*9999	38.5	72.1	86.5	38.0	37.9	37.8	*9999
1600	*9999	38.4	72.4	86.6	38.2	37.8	37.7	*9999
1700	*9999	38.4	72.4	86.9	38.0	37.7	37.7	*9999
1800	*9999	38.1	72.2	86.0	38.0	37.7	37.6	*9999
1900	*9999	38.0	72.5	86.0	38.1	37.7	38.0	*9999
2000	*9999	38.0	72.5	85.8	38.1	37.8	38.5	*9999
2100	*9999	38.0	72.5	85.6	37.9	37.6	38.7	*9999
2200	*9999	38.0	72.5	85.5	38.0	37.7	38.5	*9999
2300	*9999	38.0	72.7	85.5	37.9	37.9	38.3	*9999
2400	*9999	37.6	72.5	84.5	37.9	37.6	38.5	*9999

TABLE 69. DAILY WATER TEMPERATURE (F) DATA.  
 QUAD-CITIES STATION, APRIL 10, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD	DISCHARGE	A	B	C	D
100	*9999	37.6	72.5	82.5	37.7	37.6	37.8	*9999
200	*9999	37.5	72.4	81.5	37.7	37.6	37.8	*9999
300	*9999	37.5	71.9	82.0	37.5	37.6	37.4	*9999
400	*9999	37.4	72.0	83.4	37.4	37.6	37.7	*9999
500	*9999	37.3	71.5	84.0	37.5	37.4	37.4	*9999
600	*9999	37.2	71.4	82.6	37.4	37.2	37.4	*9999
700	*9999	37.1	70.0	82.4	37.4	37.1	36.9	*9999
800	*9999	37.0	70.0	83.6	37.4	37.1	36.9	*9999
900	*9999	37.0	70.6	84.6	37.4	37.1	36.9	*9999
1000	*9999	37.2	71.0	84.1	37.4	37.2	37.2	*9999
1100	*9999	37.4	71.0	84.0	37.4	37.3	37.2	*9999
1200	*9999	37.5	70.6	84.4	37.3	37.3	37.4	*9999
1300	*9999	37.8	70.5	84.5	37.4	37.4	37.9	*9999
1400	*9999	38.0	71.6	85.0	37.4	37.6	38.2	*9999
1500	*9999	38.1	72.0	85.3	37.5	37.6	38.4	*9999
1600	*9999	38.5	71.6	85.4	37.8	37.7	38.4	*9999
1700	*9999	38.5	71.9	85.0	37.9	38.0	38.4	*9999
1800	*9999	38.6	71.5	85.0	37.9	38.1	38.8	*9999
1900	*9999	38.5	71.6	85.0	37.9	38.1	38.7	*9999
2000	*9999	38.5	71.6	84.9	38.0	38.2	38.4	*9999
2100	*9999	38.6	71.5	84.9	38.0	38.4	38.3	*9999
2200	*9999	38.7	71.4	84.5	38.0	38.5	38.5	*9999
2300	*9999	38.6	71.7	84.0	38.4	38.6	38.5	*9999
2400	*9999	38.9	71.5	83.0	38.4	38.6	38.4	*9999

TABLE 70. DAILY WATER TEMPERATURE (F) DATA.  
 QUAD-CITIES STATION, APRIL 11, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD	DISCHARGE	A	B	C	D
100	*9999	39.0	71.2	82.5	38.4	38.6	38.4	*9999
200	*9999	39.0	71.0	83.9	38.4	38.6	38.4	*9999
300	*9999	39.0	71.0	84.1	37.4	39.7	37.6	*9999
400	*9999	38.5	70.5	84.5	*9999	39.6	36.5	*9999
500	*9999	38.0	70.5	84.1	*9999	39.7	37.3	*9999
600	*9999	38.0	70.0	83.5	*9999	39.5	37.5	*9999
700	*9999	37.5	70.0	87.0	36.9	39.1	38.0	*9999
800	*9999	37.9	69.7	83.2	37.9	38.6	38.4	*9999
900	*9999	38.3	70.0	83.0	37.9	38.3	38.8	*9999
1000	*9999	38.5	70.0	83.5	37.9	38.1	38.5	*9999
1100	*9999	38.8	69.6	83.1	37.9	38.1	38.5	*9999
1200	*9999	39.0	69.5	82.5	37.9	38.1	38.3	*9999
1300	*9999	39.0	70.1	82.6	37.9	38.1	37.9	*9999
1400	*9999	38.5	70.5	84.5	38.0	38.3	38.0	*9999
1500	*9999	38.7	71.0	84.9	38.3	38.3	38.5	*9999
1600	*9999	38.8	71.0	85.5	*9999	39.0	38.2	*9999
1700	*9999	39.0	70.6	84.5	*9999	39.3	38.2	*9999
1800	*9999	39.1	71.0	84.6	*9999	39.1	37.1	*9999
1900	*9999	38.6	72.0	85.3	*9999	39.0	38.0	*9999
2000	*9999	38.5	72.0	86.5	*9999	39.1	36.5	*9999
2100	*9999	38.3	71.0	86.5	37.2	39.1	38.0	*9999
2200	*9999	39.0	69.3	84.0	38.5	39.0	35.9	*9999
2300	*9999	39.0	69.0	82.0	39.5	39.0	35.9	*9999
2400	*9999	38.7	70.0	81.0	39.5	39.3	35.5	*9999

\*9999 OR 9999 -- INSTRUMENT MALFUNCTION

TABLE 71. DAILY WATER TEMPERATURE (F) DATA.  
 QUAD-CITIES STATION, APRIL 12, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD	DISCHARGE	A	B	C	D
100	*9999	38.7	71.1	84.0	39.9	38.7	36.0	*9999
200	*9999	38.6	72.0	84.9	40.0	38.5	35.9	*9999
300	*9999	38.7	72.5	86.0	39.8	38.7	35.6	*9999
400	*9999	39.0	72.5	86.1	40.0	39.0	35.8	*9999
500	*9999	39.0	72.6	86.5	40.0	39.1	36.3	*9999
600	*9999	39.4	74.1	87.5	40.2	39.3	36.3	*9999
700	*9999	39.0	75.0	88.0	41.0	39.0	38.0	*9999
800	*9999	39.0	75.9	88.8	41.0	38.5	38.3	*9999
900	*9999	39.3	75.7	88.6	41.1	38.5	38.5	*9999
1000	*9999	39.5	76.1	89.1	41.1	38.9	38.8	*9999
1100	*9999	39.9	76.9	89.9	41.5	39.1	39.1	*9999
1200	*9999	40.2	77.0	89.6	41.5	39.4	39.1	*9999
1300	39.5	41.1	76.6	90.1	41.6	39.9	39.5	*9999
1400	39.9	41.5	77.5	90.6	42.0	40.0	39.9	*9999
1500	40.4	42.0	77.0	90.4	42.3	40.5	40.5	*9999
1600	40.5	42.5	77.0	90.3	42.4	40.5	40.5	*9999
1700	41.0	42.5	77.0	90.6	42.5	40.9	40.6	*9999
1800	41.4	42.5	77.0	90.4	42.5	41.0	40.5	*9999
1900	41.5	42.7	77.4	90.2	42.5	41.0	41.0	*9999
2000	41.5	42.5	77.1	90.0	42.5	41.5	41.5	*9999
2100	42.0	43.0	77.1	90.9	43.0	41.6	41.4	*9999
2200	42.0	43.0	76.9	90.6	43.0	41.9	41.5	*9999
2300	42.1	43.2	76.4	90.0	43.2	42.0	41.6	*9999
2400	42.5	43.5	76.0	90.2	43.3	42.0	41.5	*9999

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TABLE 72. DAILY WATER TEMPERATURE (F) DATA.  
QUAD-CITIES STATION, APRIL 13, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL COLD END	DISCHARGE	----DOWNSTREAM SENSORS----			
					A	B	C	D
100	42.5	43.5	75.7	90.0	43.5	42.2	41.5	9999
200	42.5	43.5	76.1	87.9	43.4	42.2	41.5	9999
300	42.6	43.6	76.4	87.5	43.2	42.1	41.2	9999
400	42.5	43.6	76.1	88.7	43.2	42.0	41.0	9999
500	42.5	43.6	76.0	89.1	43.1	41.9	41.1	9999
600	42.1	43.5	75.9	89.9	42.9	41.5	41.1	9999
700	42.5	43.5	75.3	90.1	43.0	41.5	41.1	9999
800	42.2	43.6	74.9	89.5	43.0	41.4	40.7	9999
900	42.2	43.7	75.3	89.5	43.0	41.2	40.9	9999
1000	42.4	43.6	75.5	89.7	43.0	41.5	40.7	9999
1100	42.5	44.0	76.0	90.1	43.1	41.5	41.2	9999
1200	42.7	44.3	76.0	90.5	43.3	41.6	41.0	9999
1300	43.0	44.5	75.6	90.2	43.5	42.0	41.0	9999
1400	43.1	44.6	75.5	90.5	43.5	42.0	41.5	9999
1500	43.5	44.9	75.6	90.5	43.7	42.0	41.5	9999
1600	43.4	44.9	75.6	90.7	43.6	42.2	41.6	9999
1700	43.5	44.8	75.5	90.7	43.6	42.3	41.7	9999
1800	43.5	44.8	75.5	90.9	43.6	42.5	42.0	9999
1900	43.6	44.7	75.5	91.6	43.9	42.5	42.2	9999
2000	43.6	44.7	75.6	91.7	44.0	42.6	42.5	9999
2100	44.0	44.7	76.3	92.3	44.0	42.9	42.5	9999
2200	43.6	44.7	76.5	90.5	44.0	42.9	42.9	9999
2300	43.6	44.7	76.5	88.4	44.1	43.0	42.6	9999
2400	44.0	44.9	76.7	86.7	44.1	43.1	42.9	9999

TABLE 73. DAILY WATER TEMPERATURE (F) DATA.  
QUAD-CITIES STATION, APRIL 14, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL COLD END	DISCHARGE	----DOWNSTREAM SENSORS----			
					A	B	C	D
100	44.0	44.8	76.6	86.4	44.2	43.0	43.0	9999
200	43.6	44.7	76.6	86.0	44.0	43.0	43.0	9999
300	43.6	45.0	76.0	85.6	44.0	43.0	43.0	9999
400	43.6	45.0	75.0	85.0	44.0	42.9	42.7	9999
500	43.5	45.0	74.5	84.0	44.0	42.6	42.6	9999
600	43.2	44.7	74.0	83.5	44.0	42.5	42.9	9999
700	43.2	44.5	73.9	83.0	43.8	42.5	42.4	9999
800	43.4	44.5	73.6	82.6	43.8	42.5	42.5	9999
900	43.4	44.5	72.9	82.4	43.9	42.5	42.2	9999
1000	43.5	44.5	72.6	83.6	44.0	42.5	42.7	9999
1100	43.6	44.7	72.6	83.9	44.0	42.6	42.6	9999
1200	44.0	45.2	72.6	83.5	44.0	42.6	42.5	9999
1300	44.2	45.5	72.5	83.5	44.4	43.0	42.6	9999
1400	44.6	46.0	72.2	83.4	44.5	43.2	43.0	9999
1500	44.9	46.2	72.5	83.9	44.5	43.5	43.0	9999
1600	45.1	46.5	72.5	83.7	44.6	43.6	43.2	9999
1700	45.1	46.5	72.1	83.5	44.7	43.6	43.5	9999
1800	45.1	46.5	72.1	83.9	44.5	43.9	43.9	9999
1900	45.0	46.5	72.0	83.5	44.5	44.0	44.0	9999
2000	45.4	46.5	72.3	83.6	45.0	44.1	44.2	9999
2100	45.2	46.4	72.6	83.7	44.7	44.4	44.0	9999
2200	45.5	46.5	72.5	84.0	45.0	44.5	44.5	9999
2300	45.5	46.5	72.5	83.6	45.0	44.5	44.5	9999
2400	45.5	46.5	72.4	83.5	45.1	44.5	44.2	9999

TABLE 74. DAILY WATER TEMPERATURE (F) DATA.  
QUAD-CITIES STATION, APRIL 15, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL COLD END	DISCHARGE	----DOWNSTREAM SENSORS----			
					A	B	C	D
100	45.5	46.5	72.2	83.6	45.1	44.5	44.1	9999
200	45.5	46.5	72.1	85.0	45.1	44.5	44.0	9999
300	45.5	46.5	72.0	84.4	45.0	44.4	44.3	9999
400	45.2	46.5	71.7	84.1	44.9	44.1	43.8	9999
500	45.2	46.4	71.4	83.7	44.7	44.0	43.5	9999
600	45.0	46.3	71.2	83.0	44.5	43.7	43.2	9999
700	44.9	46.0	71.5	83.0	44.5	43.5	43.2	9999
800	44.9	46.0	71.0	83.0	44.5	43.5	43.0	9999
900	44.8	46.0	71.4	83.2	44.4	43.0	43.0	9999
1000	45.0	46.1	71.5	83.5	44.5	43.5	43.2	9999
1100	45.2	46.5	72.0	83.6	44.7	43.8	43.2	9999
1200	9999	9999	9999	9999	9999	9999	9999	9999
1300	9999	9999	9999	9999	9999	9999	9999	9999
1400	9999	9999	9999	9999	9999	9999	9999	9999
1500	9999	9999	9999	9999	9999	9999	9999	9999
1600	9999	9999	9999	9999	9999	9999	9999	9999
1700	9999	9999	9999	9999	9999	9999	9999	9999
1800	9999	9999	9999	9999	9999	9999	9999	9999
1900	9999	9999	9999	9999	9999	9999	9999	9999
2000	45.0	47.9	75.4	90.6	45.7	45.3	45.4	9999
2100	45.0	48.0	75.8	91.4	45.9	45.5	45.7	9999
2200	45.0	48.0	76.0	91.8	46.0	45.7	46.1	9999
2300	45.2	48.3	76.2	92.0	46.0	45.9	46.1	9999
2400	45.4	48.2	76.4	92.3	46.5	46.0	46.3	9999

TABLE 75. DAILY WATER TEMPERATURE (F) DATA.  
QUAD-CITIES STATION, APRIL 16, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL COLD END	DISCHARGE	----DOWNSTREAM SENSORS----			
					A	B	C	D
100	45.5	48.5	76.5	92.5	45.8	45.9	46.3	9999
200	45.4	48.5	76.5	92.5	46.0	46.0	46.2	9999
300	45.5	48.5	76.7	93.0	46.0	45.9	46.4	9999
400	45.7	48.5	76.5	93.0	46.0	45.5	46.4	9999
500	45.4	48.5	76.5	92.9	45.9	45.6	46.3	9999
600	45.3	48.5	76.5	93.4	45.5	45.5	46.0	9999
700	45.2	48.4	76.6	92.9	45.0	45.3	45.9	9999
800	45.0	48.4	76.9	92.5	45.7	45.1	45.6	9999
900	45.0	48.5	77.2	92.5	45.9	45.4	45.6	9999
1000	45.2	48.5	77.7	94.0	45.9	45.2	45.7	9999
1100	45.5	48.6	78.7	94.5	45.7	45.4	46.0	9999
1200	45.5	48.9	78.6	95.0	46.0	45.4	46.0	9999
1300	45.9	49.0	79.5	95.6	46.0	45.5	46.1	9999
1400	45.7	48.5	80.0	95.9	46.1	45.6	46.5	9999
1500	46.3	48.8	80.2	95.6	46.2	45.8	46.4	9999
1600	46.5	49.0	80.4	95.8	46.5	45.0	46.5	9999
1700	46.5	48.8	80.5	95.4	46.3	45.0	46.6	9999
1800	46.3	49.7	80.4	95.5	46.5	46.0	46.7	9999
1900	46.4	48.8	80.3	95.7	46.5	46.1	46.9	9999
2000	46.5	48.7	80.1	95.3	46.5	46.2	47.1	9999
2100	46.5	48.7	79.9	95.4	46.4	46.5	47.4	9999
2200	46.6	48.9	79.9	95.1	46.6	46.6	47.4	9999
2300	47.0	49.0	79.4	94.6	46.9	46.9	47.5	9999
2400	47.1	49.0	79.0	94.5	47.0	47.0	47.5	9999

9999 OR 9999 -- INSTRUMENT MALFUNCTION

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TABLE 76. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 17, 1979

TIME	UPSTREAM	INTAKE	COOLING		----DOWNSTREAM SENSORS----			
			CANAL COLD END	DISCHARGE	A	B	C	D
100	47.4	49.2	79.0	93.7	47.0	47.0	48.0	*9999
200	47.5	49.5	78.8	94.4	47.1	47.0	47.8	*9999
300	47.7	49.6	78.9	94.3	47.2	47.2	47.7	*9999
400	47.5	49.8	78.5	94.1	47.2	47.2	47.5	*9999
500	47.4	49.7	78.4	93.8	47.1	47.0	47.5	*9999
600	47.3	49.5	77.7	93.3	47.0	47.0	47.4	*9999
700	47.4	49.5	78.0	93.0	47.0	46.8	47.4	*9999
800	47.1	49.4	77.9	93.5	46.9	46.8	47.3	*9999
900	47.3	49.4	78.5	93.5	46.9	46.8	47.3	*9999
1000	47.5	49.6	78.6	94.4	46.9	46.7	47.2	*9999
1100	47.5	49.7	78.7	94.6	46.5	46.6	47.2	*9999
1200	47.7	49.0	79.2	95.4	46.5	46.7	47.1	*9999
1300	48.0	49.3	79.7	95.9	46.5	46.7	47.3	*9999
1400	48.0	49.5	80.0	95.7	47.0	47.0	47.2	*9999
1500	48.2	49.6	80.1	95.6	47.0	47.0	47.5	*9999
1600	48.5	49.9	80.4	94.8	46.9	47.1	47.4	*9999
1700	48.5	49.9	80.3	94.5	47.0	47.5	47.9	*9999
1800	48.6	50.0	80.1	94.0	47.1	47.4	48.4	*9999
1900	48.5	49.9	80.0	93.8	47.3	47.6	49.0	*9999
2000	48.7	49.9	79.7	94.6	47.4	48.0	48.5	*9999
2100	49.0	49.9	79.0	95.5	47.0	48.0	48.5	*9999
2200	49.3	50.0	78.8	95.5	47.0	48.3	48.7	*9999
2300	49.2	50.0	78.8	95.6	47.5	48.4	49.1	*9999
2400	49.7	50.5	78.7	96.0	47.7	48.7	49.2	*9999

TABLE 77. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 18, 1979

TIME	UPSTREAM	INTAKE	COOLING		----DOWNSTREAM SENSORS----			
			CANAL COLD END	DISCHARGE	A	B	C	D
100	49.0	48.2	79.0	95.6	48.0	49.0	49.5	*9999
200	49.0	48.3	79.0	96.0	48.0	49.0	49.6	*9999
300	49.0	48.5	78.8	96.0	48.0	48.8	50.0	*9999
400	49.0	48.3	78.8	95.9	48.0	48.9	49.4	*9999
500	48.8	48.4	78.7	95.6	47.6	48.5	49.1	*9999
600	48.3	48.1	78.4	95.5	47.5	48.3	49.1	*9999
700	48.0	47.9	78.4	95.5	47.7	47.7	48.9	*9999
800	48.0	47.8	78.3	95.6	47.6	47.8	48.4	*9999
900	47.5	47.5	78.0	95.5	47.5	47.5	48.9	*9999
1000	47.7	47.5	78.0	95.0	47.5	47.5	49.1	*9999
1100	48.0	47.9	77.9	95.0	47.5	47.6	48.5	*9999
1200	48.4	48.1	78.0	95.3	47.5	47.7	48.5	*9999
1300	48.4	48.4	78.4	95.7	47.5	47.9	48.5	*9999
1400	48.6	48.6	78.6	96.0	47.5	48.0	48.5	*9999
1500	49.0	49.1	78.9	95.6	47.5	48.3	48.9	*9999
1600	49.0	49.2	79.2	96.0	47.6	48.5	49.0	*9999
1700	49.3	49.3	79.2	96.4	47.8	48.5	49.2	*9999
1800	49.5	49.5	79.6	96.0	48.0	48.8	49.9	*9999
1900	49.6	49.5	80.2	96.0	48.3	49.1	50.1	*9999
2000	50.0	49.5	80.0	96.0	48.6	49.6	50.6	*9999
2100	50.0	49.5	80.0	96.3	48.7	49.6	50.5	*9999
2200	50.1	49.7	79.9	96.4	48.6	49.9	50.6	*9999
2300	50.4	49.8	79.4	95.0	48.9	50.0	50.6	*9999
2400	50.5	49.8	78.8	92.5	48.9	50.0	50.7	*9999

TABLE 78. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 19, 1979

TIME	UPSTREAM	INTAKE	COOLING		----DOWNSTREAM SENSORS----			
			CANAL COLD END	DISCHARGE	A	B	C	D
100	49.7	49.6	78.2	92.0	48.1	50.0	50.7	*9999
200	49.4	49.5	78.0	93.2	48.0	49.7	50.4	*9999
300	49.2	49.4	77.7	92.5	48.0	49.5	50.0	*9999
400	48.8	49.2	77.0	93.6	48.5	49.4	49.5	*9999
500	48.9	49.0	77.0	93.0	48.5	49.0	49.5	*9999
600	48.6	48.8	76.7	93.0	48.4	48.7	49.2	*9999
700	48.2	48.7	77.3	93.7	48.5	48.6	49.0	*9999
800	48.2	48.6	78.0	93.1	48.4	48.6	49.0	*9999
900	47.9	48.3	78.1	93.0	48.1	48.4	49.0	*9999
1000	48.0	48.3	78.5	92.4	48.0	48.4	49.0	*9999
1100	47.9	48.2	78.9	92.6	48.1	48.2	48.8	*9999
1200	47.8	48.7	79.5	93.5	48.0	48.3	48.8	*9999
1300	47.7	48.7	80.0	93.6	48.0	48.3	48.9	*9999
1400	47.8	48.7	80.1	94.4	48.6	48.6	49.0	*9999
1500	47.8	49.2	80.0	93.5	48.6	48.7	49.2	*9999
1600	47.8	49.2	80.0	93.0	48.5	48.6	49.4	*9999
1700	47.7	49.2	80.5	93.7	48.5	49.2	49.2	*9999
1800	47.8	48.6	80.9	93.4	48.9	49.3	49.5	*9999
1900	47.0	48.2	81.2	93.4	48.0	49.5	49.4	*9999
2000	47.5	48.1	81.0	93.0	47.7	49.6	49.0	*9999
2100	47.9	47.8	80.5	90.0	48.5	48.9	49.0	*9999
2200	47.4	47.8	80.9	88.0	48.6	48.8	49.1	*9999
2300	47.7	48.6	80.6	89.0	48.6	48.6	48.9	*9999
2400	47.7	48.2	80.9	90.5	48.8	48.5	49.0	*9999

TABLE 79. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 20, 1979

TIME	UPSTREAM	INTAKE	COOLING		----DOWNSTREAM SENSORS----			
			CANAL COLD END	DISCHARGE	A	B	C	D
100	47.7	48.2	80.6	90.8	48.1	48.4	49.0	*9999
200	47.7	48.2	79.5	93.1	48.3	48.5	49.1	*9999
300	47.6	48.1	78.5	91.8	48.2	48.5	49.0	*9999
400	47.5	48.2	78.9	92.2	48.1	48.4	49.0	*9999
500	47.6	48.2	79.4	92.3	48.3	48.3	48.8	*9999
600	47.5	48.1	80.0	92.7	48.3	48.3	49.0	*9999
700	47.5	48.1	80.4	93.3	48.2	48.3	49.0	*9999
800	47.6	48.2	80.2	93.3	48.1	48.3	48.8	*9999
900	47.6	48.4	80.5	93.9	48.2	48.3	48.9	*9999
1000	47.9	48.7	81.0	93.6	48.0	48.5	48.1	*9999
1100	48.2	48.7	81.6	94.1	48.4	48.7	48.5	*9999
1200	48.0	48.7	82.6	95.0	49.0	49.0	48.6	*9999
1300	48.0	48.7	82.5	95.5	48.5	48.5	48.2	*9999
1400	48.7	49.0	83.2	95.4	48.4	48.6	48.2	*9999
1500	*9999	48.4	83.0	95.0	48.4	49.8	48.0	*9999
1600	*9999	49.0	83.9	96.5	*9999	50.5	44.5	*9999
1700	*9999	48.7	84.8	95.9	*9999	50.0	46.3	*9999
1800	*9999	49.1	85.0	95.8	*9999	50.4	48.8	*9999
1900	*9999	48.9	85.0	95.4	*9999	50.6	46.5	*9999
2000	*9999	49.6	85.0	95.0	*9999	51.0	47.0	*9999
2100	*9999	48.9	85.6	96.0	*9999	51.0	47.4	*9999
2200	*9999	49.0	85.5	96.6	*9999	51.4	47.4	*9999
2300	*9999	48.0	85.6	96.8	*9999	51.3	47.9	*9999
2400	*9999	49.0	85.3	92.6	*9999	50.9	47.5	*9999

\*9999 OR 9999 -- INSTRUMENT MALFUNCTION

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TABLE 80. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 21, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL COLD END	DISCHARGE	----DOWNSTREAM SENSORS----			
					A	B	C	D
100	*9999	49.0	85.3	92.0	*9999	50.5	48.2	*9999
200	*9999	49.5	84.5	92.1	*9999	50.4	48.2	*9999
300	*9999	49.5	84.0	91.5	*9999	50.0	48.9	*9999
400	*9999	49.4	83.0	90.6	*9999	49.6	49.0	*9999
500	*9999	49.5	81.5	89.5	*9999	49.5	48.9	*9999
600	*9999	49.5	80.7	88.9	*9999	49.5	49.0	*9999
700	*9999	49.5	81.0	88.6	*9999	49.4	48.9	*9999
800	*9999	49.4	80.7	89.9	*9999	49.2	48.6	*9999
900	*9999	49.0	80.5	89.3	*9999	49.1	49.5	*9999
1000	49.2	49.2	80.5	89.0	*9999	49.0	49.1	*9999
1100	49.3	49.0	80.3	89.0	*9999	49.0	49.0	*9999
1200	49.4	49.0	80.2	89.0	*9999	49.1	49.1	*9999
1300	49.4	49.1	81.0	89.5	*9999	49.1	49.0	*9999
1400	49.5	49.5	81.2	89.6	*9999	49.2	49.1	*9999
1500	49.6	49.8	81.6	89.7	*9999	49.5	49.0	*9999
1600	50.0	50.0	81.5	90.0	*9999	49.5	49.5	*9999
1700	50.0	50.0	82.0	90.5	*9999	49.5	49.5	*9999
1800	50.1	50.1	83.0	91.5	*9999	49.6	49.6	*9999
1900	50.1	50.0	82.7	90.6	*9999	49.7	49.6	*9999
2000	50.1	50.0	82.5	91.0	*9999	49.8	49.7	*9999
2100	50.0	50.0	82.5	91.0	*9999	50.0	50.2	*9999
2200	49.9	49.9	82.4	92.6	*9999	50.1	50.1	*9999
2300	49.0	50.0	82.2	92.4	*9999	50.5	50.3	*9999
2400	*9999	50.0	82.0	92.3	*9999	50.8	50.5	*9999

TABLE 81. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 22, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL COLD END	DISCHARGE	----DOWNSTREAM SENSORS----			
					A	B	C	D
100	*9999	50.2	81.6	90.7	*9999	51.0	50.9	*9999
200	*9999	50.3	82.5	90.0	*9999	51.3	50.5	*9999
300	*9999	50.4	82.5	90.3	*9999	51.4	50.4	*9999
400	*9999	50.3	82.4	90.0	*9999	51.0	50.4	*9999
500	*9999	50.4	82.1	89.8	*9999	51.0	50.0	*9999
600	*9999	50.3	81.5	89.4	*9999	50.9	49.8	*9999
700	*9999	50.0	81.0	88.5	*9999	50.9	50.0	*9999
800	50.5	50.5	81.2	88.8	*9999	50.0	50.0	*9999
900	50.5	50.3	81.5	89.1	*9999	50.0	50.0	*9999
1000	50.7	50.6	82.0	89.5	*9999	50.0	50.5	*9999
1100	51.0	51.0	82.7	90.3	*9999	50.4	50.4	*9999
1200	51.4	51.4	82.7	90.5	*9999	50.5	50.9	*9999
1300	51.6	51.6	83.0	90.7	*9999	50.7	50.7	*9999
1400	52.1	52.0	83.3	94.0	*9999	51.0	50.9	*9999
1500	52.3	52.2	83.6	94.0	*9999	51.0	51.1	*9999
1600	52.6	52.5	83.5	94.9	*9999	51.3	51.5	*9999
1700	52.6	52.5	83.4	94.5	*9999	51.4	51.8	*9999
1800	52.6	52.6	83.4	94.5	*9999	51.5	52.1	*9999
1900	52.6	52.6	83.5	95.0	*9999	52.0	52.1	*9999
2000	53.0	52.7	84.9	95.3	*9999	52.0	52.8	*9999
2100	53.0	52.8	84.9	94.7	*9999	52.3	53.0	*9999
2200	52.5	53.0	84.5	93.0	*9999	52.6	53.0	*9999
2300	52.0	53.0	84.4	92.8	*9999	52.8	53.4	*9999
2400	52.1	53.0	84.3	92.5	*9999	52.9	53.5	*9999

TABLE 82. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 23, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL COLD END	DISCHARGE	----DOWNSTREAM SENSORS----			
					A	B	C	D
100	53.8	53.3	84.0	92.8	*9999	52.8	53.5	*9999
200	53.7	53.3	84.0	92.5	*9999	52.7	53.4	*9999
300	53.5	53.3	82.7	92.6	*9999	52.5	53.4	*9999
400	53.4	53.3	82.5	93.5	*9999	52.5	53.3	*9999
500	52.8	53.2	82.3	93.5	*9999	52.2	53.0	*9999
600	52.5	53.0	82.1	94.0	*9999	52.0	52.8	*9999
700	53.5	53.0	81.9	95.5	*9999	52.0	52.5	*9999
800	53.5	53.0	82.1	96.2	*9999	52.0	52.5	*9999
900	53.4	53.0	82.5	96.1	*9999	52.0	52.5	*9999
1000	53.4	53.3	83.5	96.3	*9999	52.0	52.6	*9999
1100	53.5	53.6	84.2	97.7	*9999	52.1	52.8	*9999
1200	53.3	53.6	84.9	98.3	*9999	52.1	52.8	*9999
1300	54.0	54.0	85.7	99.0	*9999	52.3	53.0	*9999
1400	54.0	54.0	85.7	99.1	*9999	52.5	53.5	*9999
1500	54.1	54.2	86.5	99.6	*9999	52.5	53.4	*9999
1600	54.1	54.3	86.5	100.0	*9999	52.7	53.4	*9999
1700	54.3	54.5	86.6	100.0	*9999	52.8	53.8	*9999
1800	54.5	54.6	86.9	100.0	*9999	53.0	54.1	*9999
1900	54.6	54.5	87.5	100.0	*9999	52.3	54.3	*9999
2000	54.9	54.8	87.0	100.1	*9999	53.5	54.5	*9999
2100	54.9	54.9	87.3	100.4	*9999	53.9	54.5	*9999
2200	54.8	54.9	87.1	100.5	*9999	54.0	55.4	*9999
2300	54.6	55.0	86.9	100.1	*9999	54.0	56.0	*9999
2400	54.3	55.2	87.4	100.4	*9999	54.3	56.1	*9999

TABLE 83. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 24, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL COLD END	DISCHARGE	----DOWNSTREAM SENSORS----			
					A	B	C	D
100	53.9	55.2	87.1	100.1	*9999	54.4	56.0	*9999
200	54.0	55.3	87.1	100.3	*9999	54.3	56.0	*9999
300	54.6	55.5	87.0	100.1	*9999	54.0	56.5	*9999
400	54.5	55.3	87.0	100.1	*9999	54.0	56.2	*9999
500	54.2	55.4	86.6	99.9	*9999	54.0	56.2	*9999
600	52.9	55.2	86.5	99.5	*9999	54.4	56.6	*9999
700	*9999	55.7	86.6	99.5	*9999	54.6	56.5	*9999
800	*9999	55.5	86.7	99.6	*9999	54.0	57.1	*9999
900	*9999	55.5	87.0	99.8	*9999	53.7	57.4	*9999
1000	*9999	55.5	87.0	99.9	*9999	53.5	57.4	*9999
1100	*9999	55.5	87.0	99.5	*9999	53.5	57.0	*9999
1200	*9999	55.3	86.2	99.2	*9999	53.4	56.7	*9999
1300	*9999	55.5	86.6	99.3	*9999	53.5	56.5	*9999
1400	*9999	55.8	86.6	99.5	*9999	53.5	56.5	*9999
1500	*9999	55.6	86.8	99.6	*9999	53.5	56.0	*9999
1600	*9999	55.9	87.2	99.0	*9999	53.5	55.9	*9999
1700	*9999	56.2	87.0	98.5	*9999	53.6	55.5	*9999
1800	*9999	56.1	87.1	98.4	*9999	54.4	56.1	*9999
1900	*9999	55.8	87.3	98.4	*9999	55.0	55.4	*9999
2000	*9999	55.8	87.5	98.4	*9999	55.2	55.2	*9999
2100	*9999	55.1	87.2	98.1	*9999	55.1	55.1	*9999
2200	*9999	55.3	86.8	97.5	*9999	55.1	55.5	*9999
2300	*9999	55.5	86.6	97.6	*9999	55.1	55.0	*9999
2400	*9999	55.5	87.0	98.0	*9999	56.3	54.5	*9999

\*9999 OR 9999 -- INSTRUMENT MALFUNCTION

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TABLE 84. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 25, 1979

TIME	UPSTREAM	INTAKE	COOLING		----DOWNSTREAM SENSORS----			
			CANAL COLD END	DISCHARGE	A	B	C	D
100	9999	55.0	87.0	98.0	9999	55.8	54.8	9999
200	9999	54.8	87.2	98.0	9999	55.5	55.2	9999
300	9999	54.9	87.2	98.1	9999	55.0	56.0	9999
400	9999	55.0	87.1	98.1	9999	55.2	55.2	9999
500	9999	55.0	87.3	98.2	9999	55.4	55.1	9999
600	9999	55.0	87.5	98.5	9999	55.3	55.1	9999
700	9999	55.5	87.6	98.5	9999	55.1	55.2	9999
800	9999	55.3	87.6	98.6	9999	55.2	54.8	9999
900	9999	55.7	87.6	98.6	9999	54.9	54.1	9999
1000	9999	55.8	87.5	99.0	9999	54.5	54.1	9999
1100	9999	56.3	88.2	99.4	9999	54.5	54.6	9999
1200	9999	56.5	88.7	99.6	9999	54.6	54.6	9999
1300	9999	56.6	88.4	99.6	9999	54.6	55.2	9999
1400	9999	56.2	88.0	100.0	9999	54.5	54.8	9999
1500	9999	56.2	88.3	100.0	9999	54.6	54.9	9999
1600	9999	56.3	88.6	100.0	9999	54.8	54.9	9999
1700	9999	56.3	88.6	100.0	9999	54.9	54.9	9999
1800	9999	56.1	88.5	99.9	9999	55.2	55.0	9999
1900	9999	56.3	89.1	99.1	9999	55.2	55.5	9999
2000	9999	56.5	88.1	99.1	9999	55.7	55.4	9999
2100	9999	55.6	86.5	97.5	9999	55.8	55.2	9999
2200	9999	56.0	84.5	96.9	9999	56.0	54.9	9999
2300	9999	55.9	83.5	95.8	9999	55.9	54.9	9999
2400	9999	56.0	82.9	95.0	9999	55.0	55.3	9999

TABLE 85. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 26, 1979

TIME	UPSTREAM	INTAKE	COOLING		----DOWNSTREAM SENSORS----			
			CANAL COLD END	DISCHARGE	A	B	C	D
100	9999	56.2	82.6	94.6	9999	54.8	55.5	9999
200	9999	55.5	81.8	94.0	9999	54.5	55.1	9999
300	9999	56.0	81.6	94.0	9999	54.5	55.3	9999
400	9999	55.5	81.2	93.5	9999	54.5	55.4	9999
500	9999	55.5	81.0	93.5	9999	54.3	55.0	9999
600	9999	55.3	80.6	93.4	9999	54.1	55.0	9999
700	9999	54.6	80.2	93.2	9999	54.0	54.8	9999
800	9999	54.6	80.1	93.0	9999	54.0	54.5	9999
900	9999	55.0	80.7	93.5	9999	54.0	54.7	9999
1000	9999	55.0	80.0	93.7	9999	54.0	54.9	9999
1100	9999	55.2	79.5	94.2	9999	54.0	54.9	9999
1200	9999	55.0	79.6	94.5	9999	54.1	55.0	9999
1300	9999	55.6	80.5	94.5	9999	54.1	54.9	9999
1400	9999	55.6	79.6	95.0	9999	54.1	55.0	9999
1500	9999	55.6	80.0	95.0	9999	54.2	55.0	9999
1600	9999	55.6	80.5	95.1	9999	54.3	55.4	9999
1700	9999	55.5	80.3	95.0	9999	54.3	55.5	9999
1800	9999	55.5	80.6	94.8	9999	54.3	55.6	9999
1900	9999	55.5	80.6	94.9	9999	54.5	55.9	9999
2000	9999	55.5	80.5	93.0	9999	54.5	55.9	9999
2100	9999	55.3	80.4	90.7	9999	54.6	55.9	9999
2200	9999	55.2	80.5	87.5	9999	54.9	56.0	9999
2300	9999	55.3	80.5	86.5	9999	54.8	55.9	9999
2400	9999	55.4	80.5	86.5	9999	54.7	55.9	9999

TABLE 86. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 27, 1979

TIME	UPSTREAM	INTAKE	COOLING		----DOWNSTREAM SENSORS----			
			CANAL COLD END	DISCHARGE	A	B	C	D
100	9999	55.4	80.0	86.0	9999	54.6	55.5	9999
200	9999	55.3	79.5	86.1	9999	54.5	55.5	9999
300	9999	55.2	78.1	87.0	9999	54.5	55.5	9999
400	9999	55.2	77.8	87.4	9999	54.5	55.4	9999
500	9999	54.9	73.3	87.5	9999	54.3	55.1	9999
600	9999	55.0	77.3	87.5	9999	54.3	54.9	9999
700	9999	54.7	77.5	87.0	9999	54.0	54.9	9999
800	9999	54.6	77.4	87.0	9999	54.0	54.9	9999
900	9999	54.6	76.8	86.5	9999	53.9	54.6	9999
1000	9999	54.5	76.7	86.1	9999	53.9	54.5	9999
1100	9999	54.4	76.4	85.9	9999	53.5	54.5	9999
1200	9999	54.5	75.1	87.5	9999	53.5	54.5	9999
1300	9999	54.5	74.5	86.5	9999	53.4	54.4	9999
1400	9999	54.4	74.0	84.0	9999	53.4	54.1	9999
1500	9999	54.2	73.0	81.0	9999	54.0	54.0	9999
1600	9999	53.4	72.0	77.4	9999	53.5	53.5	9999
1700	9999	53.0	72.1	76.6	9999	53.0	53.4	9999
1800	9999	53.0	71.8	74.5	9999	52.5	53.4	9999
1900	9999	53.0	71.5	73.0	9999	52.5	53.3	9999
2000	9999	52.5	70.5	72.4	9999	52.5	53.0	9999
2100	9999	52.5	69.4	71.0	9999	52.9	52.9	9999
2200	9999	52.5	69.0	70.5	9999	52.6	52.5	9999
2300	9999	52.3	68.5	70.3	9999	52.5	52.5	9999
2400	9999	52.0	68.0	70.0	9999	52.0	52.5	9999

TABLE 87. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, APRIL 28, 1979

TIME	UPSTREAM	INTAKE	COOLING		----DOWNSTREAM SENSORS----			
			CANAL COLD END	DISCHARGE	A	B	C	D
100	9999	52.0	67.9	69.7	9999	51.9	52.0	9999
200	9999	51.7	67.6	69.2	9999	51.5	52.0	9999
300	9999	55.7	68.3	87.0	9999	51.5	52.0	9999
400	9999	53.5	68.0	91.6	9999	51.4	52.0	9999
500	9999	52.3	67.0	89.7	9999	51.2	51.8	9999
600	9999	52.0	66.0	88.5	9999	51.0	51.8	9999
700	9999	51.6	65.5	87.5	9999	51.0	51.7	9999
800	9999	51.4	65.3	87.0	9999	51.0	51.6	9999
900	9999	51.4	65.0	86.5	9999	51.0	51.9	9999
1000	9999	51.4	68.6	87.0	9999	51.1	51.9	9999
1100	9999	52.0	74.5	92.6	9999	51.1	51.9	9999
1200	9999	52.6	73.6	94.5	9999	51.5	51.9	9999
1300	9999	53.2	74.5	92.5	9999	51.5	52.1	9999
1400	9999	53.5	74.0	93.0	9999	51.5	52.4	9999
1500	9999	53.8	73.5	93.2	9999	51.5	52.3	9999
1600	9999	53.4	74.2	93.0	9999	51.5	52.3	9999
1700	9999	53.8	73.6	93.0	9999	51.6	52.3	9999
1800	9999	54.0	75.4	93.5	9999	52.0	52.5	9999
1900	9999	54.5	76.2	95.0	9999	52.0	52.5	9999
2000	9999	54.6	76.5	95.4	9999	52.3	53.2	9999
2100	9999	54.7	75.4	95.0	9999	52.4	53.3	9999
2200	9999	54.5	75.3	95.0	9999	52.5	53.1	9999
2300	9999	54.5	75.2	95.0	9999	52.6	53.1	9999
2400	9999	54.8	75.0	94.9	9999	52.5	53.0	9999

9999 OR 9999 -- INSTRUMENT MALFUNCTION

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TABLE 88. DAILY WATER TEMPERATURE (F) DATA,  
GUAD-CITIES STATION, APRIL 29, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	*9999	54.9	74.0	94.5	*9999	52.5	52.8	*9999
200	*9999	*9999	*9999	*9999	*9999	*9999	*9999	*9999
300	*9999	54.5	75.1	94.9	*9999	52.4	52.6	*9999
400	*9999	55.0	75.3	92.1	*9999	52.3	52.4	*9999
500	*9999	55.0	75.4	91.4	*9999	52.4	52.4	*9999
600	*9999	55.2	75.2	91.4	*9999	52.3	52.4	*9999
700	*9999	55.4	75.3	91.0	*9999	52.3	52.1	*9999
800	*9999	55.2	75.0	92.6	*9999	52.1	52.0	*9999
900	*9999	54.5	74.9	92.9	*9999	52.0	51.9	*9999
1000	*9999	55.0	74.5	94.0	*9999	51.7	51.5	*9999
1100	*9999	54.8	73.9	94.4	*9999	51.6	51.6	*9999
1200	*9999	54.3	73.5	94.0	*9999	51.5	51.5	*9999
1300	*9999	53.7	73.6	93.7	*9999	51.5	51.5	*9999
1400	*9999	53.4	74.0	93.4	*9999	51.5	51.5	*9999
1500	*9999	52.7	75.0	94.0	*9999	51.5	51.5	*9999
1600	*9999	53.1	75.5	95.0	*9999	51.4	51.5	*9999
1700	*9999	54.1	76.5	96.1	*9999	51.2	51.3	*9999
1800	*9999	53.5	76.3	93.4	*9999	51.9	51.5	*9999
1900	*9999	52.0	76.0	88.3	*9999	51.5	51.3	*9999
2000	*9999	51.2	75.5	67.6	*9999	51.0	51.0	*9999
2100	*9999	50.9	75.0	66.9	*9999	50.9	51.0	*9999
2200	*9999	50.5	74.3	65.5	*9999	50.8	51.0	*9999
2300	*9999	50.2	73.2	69.0	*9999	50.7	50.8	*9999
2400	*9999	50.0	73.0	72.2	*9999	50.6	51.0	*9999

\*9999 OR 9999 -- INSTRUMENT MALFUNCTION

TABLE 89. DAILY WATER TEMPERATURE (F) DATA,  
GUAD-CITIES STATION, APRIL 30, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		----DOWNSTREAM SENSORS----			
			COLD END	DISCHARGE	A	B	C	D
100	*9999	50.0	67.0	68.6	*9999	50.6	50.8	*9999
200	*9999	50.0	66.2	65.2	*9999	50.6	50.9	*9999
300	*9999	49.5	66.1	65.4	*9999	50.5	50.5	*9999
400	*9999	49.5	67.5	66.0	*9999	50.4	50.5	*9999
500	*9999	49.3	68.1	67.6	*9999	50.1	50.3	*9999
600	*9999	49.1	66.0	66.9	*9999	50.0	50.1	*9999
700	*9999	49.0	64.5	65.0	*9999	50.0	50.0	*9999
800	*9999	48.8	64.5	64.8	*9999	49.7	49.9	*9999
900	*9999	48.5	64.5	66.5	*9999	49.4	49.4	*9999
1000	*9999	48.5	65.5	67.7	*9999	49.3	49.3	*9999
1100	*9999	48.7	66.5	70.0	*9999	49.5	49.5	*9999
1200	*9999	48.7	65.5	69.0	*9999	49.4	49.5	*9999
1300	*9999	49.0	65.3	68.5	*9999	49.4	49.4	*9999
1400	*9999	49.0	66.5	70.6	*9999	49.4	49.2	*9999
1500	*9999	49.0	66.8	72.4	*9999	49.3	49.4	*9999
1600	*9999	49.0	67.5	74.2	*9999	49.4	49.2	*9999
1700	*9999	48.9	67.5	74.0	*9999	49.4	45.0	*9999
1800	*9999	48.8	67.5	79.5	*9999	49.5	49.1	*9999
1900	*9999	48.9	68.0	80.0	*9999	49.6	49.1	*9999
2000	*9999	48.7	69.9	82.4	*9999	49.8	49.3	*9999
2100	*9999	48.8	70.5	83.0	*9999	49.9	49.3	*9999
2200	*9999	48.9	71.3	83.5	*9999	49.8	49.2	*9999
2300	*9999	48.9	72.0	84.0	*9999	49.8	49.2	*9999
2400	*9999	48.7	72.0	84.0	*9999	49.8	49.1	*9999

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TABLE 91. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 2, 1979

TIME	COOLING				DOWNSTREAM SENSORS---				DOWNSTREAM SENSORS---				
	UPSTREAM	INTAKE	CANAL COLD DISCHARGE (EMI)	TIME	A	B	C	D	A	B	C	D	
													UPSTREAM
100	9999	48.9	72.9	100	9999	50.3	9999	100	9999	50.3	9999	51.8	9999
200	9999	48.9	72.9	200	9999	50.3	9999	200	9999	50.3	9999	51.6	9999
300	9999	49.0	73.0	300	9999	50.0	9999	300	9999	50.0	9999	51.6	9999
400	9999	49.3	73.5	400	9999	50.0	9999	400	9999	50.0	9999	51.5	9999
500	9999	49.3	73.5	500	9999	50.0	9999	500	9999	50.0	9999	51.2	9999
600	9999	49.0	73.5	600	9999	50.0	9999	600	9999	50.0	9999	51.2	9999
700	9999	48.1	73.5	700	9999	50.0	9999	700	9999	50.0	9999	51.0	9999
800	9999	48.9	73.5	800	9999	49.5	9999	800	9999	50.0	9999	50.9	9999
900	9999	49.0	73.5	900	9999	48.5	9999	900	9999	50.0	9999	50.4	9999
1000	9999	49.1	74.0	1000	9999	49.5	9999	1000	9999	50.0	9999	50.0	9999
1100	9999	49.4	74.9	1100	9999	49.5	9999	1100	9999	50.0	9999	51.2	9999
1200	9999	49.6	75.0	1200	9999	49.6	9999	1200	9999	50.0	9999	51.2	9999
1300	9999	49.7	75.5	1300	9999	49.6	9999	1300	9999	50.0	9999	51.6	9999
1400	9999	49.7	75.5	1400	9999	49.7	9999	1400	9999	50.0	9999	51.6	9999
1500	9999	49.9	75.5	1500	9999	49.9	9999	1500	9999	50.0	9999	51.3	9999
1600	9999	49.9	75.3	1600	9999	49.9	9999	1600	9999	50.0	9999	51.1	9999
1700	9999	49.5	75.2	1700	9999	49.9	9999	1700	9999	50.0	9999	51.1	9999
1800	9999	49.7	76.0	1800	9999	50.0	9999	1800	9999	50.0	9999	51.8	9999
1900	9999	49.9	76.5	1900	9999	50.1	9999	1900	9999	51.6	9999	51.8	9999
2000	9999	49.8	77.5	2000	9999	50.2	9999	2000	9999	52.0	9999	52.0	9999
2100	9999	49.5	76.5	2100	9999	50.5	9999	2100	9999	52.0	9999	52.0	9999
2200	9999	49.6	76.5	2200	9999	50.5	9999	2200	9999	52.2	9999	52.0	9999
2300	9999	49.6	76.6	2300	9999	50.5	9999	2300	9999	52.1	9999	51.7	9999
2400	9999	49.8	76.9	2400	9999	50.5	9999	2400	9999	52.0	9999	51.7	9999

TABLE 90. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 1, 1979

TIME	COOLING				DOWNSTREAM SENSORS---				DOWNSTREAM SENSORS---				
	UPSTREAM	INTAKE	CANAL COLD DISCHARGE (EMI)	TIME	A	B	C	D	A	B	C	D	
													UPSTREAM
100	9999	48.9	72.9	100	9999	50.3	9999	100	9999	50.3	9999	51.8	9999
200	9999	48.9	72.9	200	9999	50.0	9999	200	9999	50.0	9999	51.6	9999
300	9999	49.0	73.0	300	9999	50.0	9999	300	9999	50.0	9999	51.6	9999
400	9999	49.3	73.5	400	9999	50.0	9999	400	9999	50.0	9999	51.5	9999
500	9999	49.3	73.5	500	9999	50.0	9999	500	9999	50.0	9999	51.2	9999
600	9999	49.0	73.5	600	9999	50.0	9999	600	9999	50.0	9999	51.2	9999
700	9999	48.1	73.5	700	9999	50.0	9999	700	9999	50.0	9999	51.0	9999
800	9999	48.9	73.5	800	9999	49.5	9999	800	9999	50.0	9999	50.9	9999
900	9999	49.0	73.5	900	9999	48.5	9999	900	9999	50.0	9999	50.4	9999
1000	9999	49.1	74.0	1000	9999	49.5	9999	1000	9999	50.0	9999	50.0	9999
1100	9999	49.4	74.9	1100	9999	49.5	9999	1100	9999	50.0	9999	51.2	9999
1200	9999	49.6	75.0	1200	9999	49.6	9999	1200	9999	50.0	9999	51.2	9999
1300	9999	49.7	75.5	1300	9999	49.6	9999	1300	9999	50.0	9999	51.6	9999
1400	9999	49.7	75.5	1400	9999	49.7	9999	1400	9999	50.0	9999	51.6	9999
1500	9999	49.9	75.5	1500	9999	49.9	9999	1500	9999	50.0	9999	51.3	9999
1600	9999	49.9	75.3	1600	9999	49.9	9999	1600	9999	50.0	9999	51.1	9999
1700	9999	49.5	75.2	1700	9999	49.9	9999	1700	9999	50.0	9999	51.1	9999
1800	9999	49.7	76.0	1800	9999	50.0	9999	1800	9999	50.0	9999	51.8	9999
1900	9999	49.9	76.5	1900	9999	50.1	9999	1900	9999	51.6	9999	51.8	9999
2000	9999	49.8	77.5	2000	9999	50.2	9999	2000	9999	52.0	9999	52.0	9999
2100	9999	49.5	76.5	2100	9999	50.5	9999	2100	9999	52.0	9999	52.0	9999
2200	9999	49.6	76.5	2200	9999	50.5	9999	2200	9999	52.2	9999	52.0	9999
2300	9999	49.6	76.6	2300	9999	50.5	9999	2300	9999	52.1	9999	51.7	9999
2400	9999	49.8	76.9	2400	9999	50.5	9999	2400	9999	52.0	9999	51.7	9999

TABLE 93. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 4, 1979

TIME	COOLING				DOWNSTREAM SENSORS---				DOWNSTREAM SENSORS---				
	UPSTREAM	INTAKE	CANAL COLD DISCHARGE	TIME	A	B	C	D	A	B	C	D	
													UPSTREAM
100	9999	49.0	73.2	100	9999	51.3	9999	100	9999	51.3	9999	51.8	9999
200	9999	49.1	73.6	200	9999	51.6	9999	200	9999	51.7	9999	51.8	9999
300	9999	49.5	76.5	300	9999	52.2	9999	300	9999	51.8	9999	50.7	9999
400	9999	49.8	77.6	400	9999	51.4	9999	400	9999	51.7	9999	51.6	9999
500	9999	49.8	77.0	500	9999	51.8	9999	500	9999	51.7	9999	51.5	9999
600	9999	49.8	77.5	600	9999	51.6	9999	600	9999	51.5	9999	51.2	9999
700	9999	49.7	76.4	700	9999	51.3	9999	700	9999	51.5	9999	51.0	9999
800	9999	49.5	76.5	800	9999	51.3	9999	800	9999	51.4	9999	50.6	9999
900	9999	49.6	76.1	900	9999	51.0	9999	900	9999	51.2	9999	50.6	9999
1000	9999	49.5	76.5	1000	9999	51.0	9999	1000	9999	51.4	9999	50.7	9999
1100	9999	49.5	77.3	1100	9999	50.0	9999	1100	9999	51.4	9999	50.8	9999
1200	9999	49.8	77.5	1200	9999	50.2	9999	1200	9999	50.9	9999	50.9	9999
1300	9999	50.5	77.9	1300	9999	50.4	9999	1300	9999	51.0	9999	51.0	9999
1400	9999	50.7	78.6	1400	9999	50.5	9999	1400	9999	51.3	9999	51.2	9999
1500	9999	51.2	79.1	1500	9999	50.5	9999	1500	9999	51.3	9999	51.0	9999
1600	9999	51.2	79.7	1600	9999	50.6	9999	1600	9999	51.7	9999	51.0	9999
1700	9999	51.5	80.0	1700	9999	50.4	9999	1700	9999	51.9	9999	51.2	9999
1800	9999	51.6	80.2	1800	9999	51.0	9999	1800	9999	51.9	9999	51.5	9999
1900	9999	51.6	80.1	1900	9999	51.1	9999	1900	9999	51.9	9999	51.5	9999
2000	9999	51.6	80.1	2000	9999	51.3	9999	2000	9999	51.5	9999	51.7	9999
2100	9999	51.6	80.2	2100	9999	51.5	9999	2100	9999	51.5	9999	51.9	9999
2200	9999	51.6	80.3	2200	9999	51.5	9999	2200	9999	51.7	9999	51.9	9999
2300	9999	51.7	79.8	2300	9999	51.6	9999	2300	9999	51.7	9999	51.7	9999
2400	9999	51.7	79.5	2400	9999	51.8	9999	2400	9999	51.7	9999	51.6	9999

TABLE 92. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 3, 1979

TIME	COOLING				DOWNSTREAM SENSORS---				DOWNSTREAM SENSORS---				
	UPSTREAM	INTAKE	CANAL COLD DISCHARGE	TIME	A	B	C	D	A	B	C	D	
													UPSTREAM
100	9999	49.0	73.2	100	9999	51.3	9999	100	9999	51.3	9999	51.8	9999
200	9999	49.1	73.6	200	9999	51.6	9999	200	9999	51.7	9999	51.8	9999
300	9999	49.5	76.5	300	9999	52.2	9999	300	9999	51.8	9999	50.7	9999
400	9999	49.8	77.6	400	9999	51.4	9999	400	9999	51.7	9999	51.6	9999
500	9999	49.8	77.0	500	9999	51.8	9999	500	9999	51.7	9999	51.5	9999
600	9999	49.8	77.5	600	9999	51.6	9999	600	9999	51.5	9999	51.2	9999
700	9999	49.7	76.4	700	9999	51.3	9999	700	9999	51.5	9999	51.0	9999
800	9999	49.5	76.5	800	9999	51.3	9999	800	9999	51.4	9999	50.6	9999
900	9999	49.6	76.1	900	9999	51.0	9999	900	9999	51.2	9999	50.6	9999
1000	9999	49.5	76.5	1000	9999	51.0	9999	1000	9999	51.4	9999	50.7	9999
1100	9999	49.5	77.3	1100	9999	50.0	9999	1100	9999	51.4	9999	50.8	9999
1200													

TABLE 94. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, MAY 5, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		---DOWNSTREAM SENSORS---			
			COLD	DISCHARGE	A	B	C	D
100	9999	51.9	81.8	88.6	51.9	52.5	9999	9999
200	9999	51.9	80.9	87.8	51.9	52.6	9999	9999
300	9999	51.9	79.6	87.1	52.0	52.5	9999	9999
400	9999	51.7	78.6	86.3	51.9	52.5	9999	9999
500	9999	51.6	78.0	85.2	51.8	52.3	9999	9999
600	9999	51.5	77.8	86.4	51.6	52.0	9999	9999
700	9999	51.5	77.6	86.4	51.5	52.0	9999	9999
800	9999	51.5	77.4	87.1	51.5	51.7	9999	9999
900	9999	51.5	77.1	89.1	51.5	51.7	9999	9999
1000	9999	51.5	77.4	88.5	51.5	51.8	9999	9999
1100	9999	52.0	77.6	88.9	51.5	52.0	9999	9999
1200	9999	52.2	78.0	89.0	51.5	52.0	9999	9999
1300	9999	52.6	78.1	89.5	51.5	52.1	9999	9999
1400	9999	53.0	78.5	91.0	51.5	52.3	9999	9999
1500	9999	53.5	79.0	91.0	51.5	52.5	9999	9999
1600	9999	53.2	78.6	91.0	51.6	52.5	9999	9999
1700	9999	53.3	78.8	91.4	51.5	52.6	9999	9999
1800	9999	53.3	79.1	91.6	51.6	52.7	9999	9999
1900	9999	53.4	79.5	91.9	51.5	53.0	9999	9999
2000	9999	53.4	80.4	92.8	51.8	53.2	9999	9999
2100	9999	53.3	80.5	93.4	51.7	53.3	9999	9999
2200	9999	53.5	81.0	93.6	52.0	53.5	9999	9999
2300	9999	53.5	81.2	93.9	51.9	53.5	9999	9999
2400	9999	53.5	81.5	96.4	52.0	53.5	9999	9999

TABLE 95. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, MAY 6, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		---DOWNSTREAM SENSORS---			
			COLD	DISCHARGE	A	B	C	D
100	9999	53.5	81.5	94.3	51.7	53.5	9999	9999
200	9999	53.5	81.5	92.5	51.9	53.5	9999	9999
300	9999	53.6	81.9	92.0	51.9	53.5	9999	9999
400	9999	53.6	81.9	92.1	51.9	53.3	9999	9999
500	9999	53.5	82.0	92.1	52.0	53.2	9999	9999
600	9999	53.5	82.0	92.4	52.0	53.0	9999	9999
700	9999	53.5	81.5	92.5	52.0	53.0	9999	9999
800	9999	53.3	81.5	92.3	52.0	53.0	9999	9999
900	9999	53.5	81.8	93.5	52.0	52.7	9999	9999
1000	9999	53.5	82.0	94.0	52.0	53.0	9999	9999
1100	9999	53.6	82.2	94.6	52.0	53.0	9999	9999
1200	9999	54.0	82.3	95.7	52.0	53.2	9999	9999
1300	9999	54.4	83.4	96.3	51.8	53.5	9999	9999
1400	9999	54.9	83.2	96.2	51.9	53.5	9999	9999
1500	9999	55.1	83.1	97.3	51.8	53.7	9999	9999
1600	9999	55.3	83.3	97.0	51.9	54.0	9999	9999
1700	9999	55.5	82.9	97.0	51.9	54.3	9999	9999
1800	9999	55.5	83.2	96.9	52.0	54.5	9999	9999
1900	9999	55.6	82.5	96.7	52.0	54.5	9999	9999
2000	9999	55.5	82.6	96.6	52.0	54.6	9999	9999
2100	9999	55.5	82.3	96.5	52.0	54.6	9999	9999
2200	9999	55.6	82.3	96.5	52.0	54.8	9999	9999
2300	9999	55.6	82.3	96.5	52.0	55.0	9999	9999
2400	9999	55.6	82.4	96.3	52.0	55.0	9999	9999

TABLE 96. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, MAY 7, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		---DOWNSTREAM SENSORS---			
			COLD	DISCHARGE	A	B	C	D
100	9999	55.8	82.5	96.5	52.0	55.3	9999	9999
200	9999	9999	9999	9999	9999	9999	9999	9999
300	9999	9999	9999	9999	9999	9999	9999	9999
400	9999	9999	9999	9999	9999	9999	9999	9999
500	9999	9999	9999	9999	9999	9999	9999	9999
600	9999	9999	9999	9999	9999	9999	9999	9999
700	9999	9999	9999	9999	9999	9999	9999	9999
800	9999	9999	9999	9999	9999	9999	9999	9999
900	9999	9999	9999	9999	9999	9999	9999	9999
1000	9999	56.0	81.6	94.0	9999	55.0	9999	9999
1100	9999	56.1	82.5	96.5	9999	54.9	9999	9999
1200	52.5	56.5	82.4	97.0	9999	55.1	9999	9999
1300	56.1	56.7	82.7	97.5	9999	55.3	9999	9999
1400	9999	57.2	83.0	98.5	9999	55.5	9999	9999
1500	9999	57.5	82.3	98.3	9999	55.7	9999	9999
1600	55.4	58.0	82.7	98.5	9999	56.0	9999	9999
1700	9999	58.3	83.5	99.3	9999	56.1	9999	9999
1800	9999	58.5	83.5	99.6	9999	56.5	9999	9999
1900	9999	58.5	84.0	100.0	9999	56.6	9999	9999
2000	9999	58.5	84.0	100.0	9999	56.8	9999	9999
2100	9999	58.5	83.8	100.0	9999	57.0	9999	9999
2200	9999	58.5	84.1	100.5	9999	57.0	9999	9999
2300	9999	58.5	84.4	99.4	9999	57.5	9999	9999
2400	9999	58.7	84.5	100.2	9999	57.6	9999	9999

TABLE 97. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, MAY 8, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		---DOWNSTREAM SENSORS---			
			COLD	DISCHARGE	A	B	C	D
100	9999	59.0	84.5	100.5	9999	57.6	9999	9999
200	9999	59.1	84.7	100.7	9999	57.9	9999	9999
300	9999	59.3	85.0	100.6	9999	57.8	9999	9999
400	9999	59.5	84.7	100.7	9999	57.7	9999	9999
500	9999	59.5	84.8	99.0	9999	57.7	9999	9999
600	9999	59.5	84.9	99.0	9999	57.7	9999	9999
700	9999	59.5	84.9	98.9	9999	57.7	9999	9999
800	9999	59.6	85.0	98.7	9999	57.6	9999	9999
900	9999	59.6	84.8	99.0	9999	57.6	9999	9999
1000	58.6	59.9	84.5	99.0	9999	57.5	9999	9999
1100	57.7	60.2	84.3	98.5	9999	57.8	9999	9999
1200	9999	60.6	85.0	92.5	9999	58.0	9999	9999
1300	58.8	61.0	84.7	95.6	9999	58.0	9999	9999
1400	9999	61.3	83.2	95.0	9999	58.6	9999	9999
1500	9999	61.5	82.5	94.6	9999	57.0	9999	9999
1600	9999	62.0	81.0	84.4	9999	58.9	9999	9999
1700	9999	61.5	80.1	84.3	9999	59.4	9999	9999
1800	9999	61.5	79.7	84.6	9999	59.6	9999	9999
1900	9999	61.5	78.2	84.5	9999	59.9	9999	9999
2000	9999	61.6	77.9	84.9	9999	60.0	9999	9999
2100	9999	61.5	77.5	84.7	9999	60.2	9999	9999
2200	9999	61.8	76.9	83.6	9999	60.3	9999	9999
2300	9999	61.8	76.5	83.4	9999	60.5	9999	9999
2400	9999	61.2	75.3	84.5	9999	60.6	9999	9999

9999 OR 9999 -- INSTRUMENT MALFUNCTION



TABLE 94. DAILY WATER TEMPERATURE (F) DATA, QUAJ-CITIES STATION, MAY 9, 1979

TIME	COOLING CANAL		UPSTREAM		INTAKE		DOWNSTREAM SENSORS---		DISCHARGE		DOWNSTREAM SENSORS---		
	UPSTREAM	INTAKE	INTAKE	INTAKE	INTAKE	INTAKE	A	B	C	D	A	B	
100	9999	61.1	74.7	86.6	9999	50.2	9999	100	9999	53.4	85.5	9999	62.0
200	9999	61.3	74.9	71.2	9999	50.3	9999	200	9999	63.4	85.5	9999	62.0
300	9999	61.3	75.0	73.6	9999	60.5	9999	300	9999	63.7	85.5	9999	62.0
400	9999	61.3	76.1	75.0	9999	60.4	9999	400	9999	63.7	86.2	9999	62.0
500	9999	61.3	77.6	76.4	9999	60.6	9999	500	9999	63.5	86.5	9999	61.8
600	9999	61.2	78.9	77.5	9999	60.0	9999	600	9999	63.4	86.5	9999	61.6
700	9999	61.2	80.7	79.0	9999	50.6	9999	700	9999	63.4	86.4	9999	61.2
800	9999	61.2	82.4	80.3	9999	60.2	9999	800	9999	63.3	85.1	9999	61.0
900	9999	61.3	83.9	82.9	9999	60.1	9999	900	9999	63.3	85.1	9999	60.7
1000	9999	61.3	85.0	83.9	9999	50.3	9999	1000	9999	63.3	87.4	9999	60.7
1100	9999	61.4	85.0	85.0	9999	60.5	9999	1100	9999	63.3	87.3	9999	61.0
1200	9999	61.2	85.7	83.9	9999	60.6	9999	1200	9999	63.4	87.5	9999	61.2
1300	9999	62.3	86.9	85.0	9999	60.7	9999	1300	9999	63.9	89.5	9999	61.3
1400	62.1	82.7	86.0	85.9	9999	61.2	9999	1400	9999	63.8	88.5	9999	61.3
1500	9999	62.6	87.5	85.9	9999	50.6	9999	1500	9999	64.3	88.0	9999	61.5
1600	9999	62.8	87.0	85.9	9999	61.0	9999	1600	9999	64.2	87.4	9999	61.5
1700	9999	62.8	86.2	86.2	9999	51.0	9999	1700	9999	64.2	87.0	9999	61.6
1800	9999	62.9	86.0	86.0	9999	61.3	9999	1800	9999	64.8	87.3	9999	61.6
1900	9999	63.2	85.9	85.9	9999	61.5	9999	1900	9999	64.9	87.0	9999	61.8
2000	9999	63.3	85.5	85.5	9999	61.5	9999	2000	9999	64.8	87.3	9999	62.0
2100	9999	63.1	85.2	85.2	9999	61.6	9999	2100	9999	64.8	87.0	9999	62.3
2200	9999	63.2	85.2	85.2	9999	61.6	9999	2200	9999	64.9	87.3	9999	62.3
2300	9999	63.2	85.0	85.0	9999	61.9	9999	2300	9999	64.9	87.3	9999	62.9
2400	9999	63.3	85.2	85.2	9999	62.0	9999	2400	9999	64.2	87.7	9999	63.1
										59.7	100.3	63.0	63.0

TABLE 100. DAILY WATER TEMPERATURE (F) DATA, QUAJ-CITIES STATION, MAY 11, 1979

TIME	COOLING CANAL		UPSTREAM		INTAKE		DOWNSTREAM SENSORS---		DISCHARGE		DOWNSTREAM SENSORS---		
	UPSTREAM	INTAKE	INTAKE	INTAKE	INTAKE	INTAKE	A	B	C	D	A	B	
100	9999	63.4	87.1	94.5	9999	59.8	9999	100	9999	61.1	72.3	76.9	62.9
200	9999	64.6	87.0	95.0	9999	59.2	9999	200	9999	60.3	72.5	77.5	62.9
300	9999	64.0	86.9	92.6	9999	59.5	9999	300	9999	62.5	71.7	73.0	62.5
400	9999	62.3	83.3	92.1	9999	59.3	9999	400	9999	61.5	70.0	73.3	62.4
500	9999	63.1	82.7	87.9	9999	60.5	9999	500	9999	61.0	69.0	89.9	62.7
600	9999	63.4	81.5	86.0	9999	60.7	9999	600	9999	61.3	67.7	88.5	62.9
700	9999	63.5	79.1	83.9	9999	60.9	9999	700	9999	62.4	67.1	87.5	63.0
800	9999	63.5	77.6	81.5	9999	61.3	9999	800	9999	62.0	66.6	87.0	63.0
900	9999	63.3	76.2	81.1	9999	61.9	9999	900	9999	59.8	66.5	86.5	63.0
1000	9999	63.1	74.3	79.3	9999	62.3	9999	1000	9999	59.5	70.4	87.0	62.0
1100	9999	63.1	74.7	78.4	9999	62.8	9999	1100	9999	60.0	72.5	95.7	61.8
1200	9999	63.5	74.3	79.5	9999	62.9	9999	1200	9999	60.3	72.1	72.7	63.1
1300	62.1	63.2	73.6	79.0	9999	62.9	9999	1300	9999	60.5	72.9	93.2	61.9
1400	9999	63.0	73.3	78.0	9999	62.6	9999	1400	9999	60.7	73.5	93.5	61.9
1500	9999	62.2	72.0	81.4	9999	62.8	9999	1500	9999	61.2	73.5	93.2	61.9
1600	9999	63.0	72.0	82.1	9999	62.8	9999	1600	9999	61.5	73.5	93.9	61.8
1700	9999	62.7	71.1	81.6	9999	62.7	9999	1700	9999	61.9	74.0	94.6	62.0
1800	9999	62.6	71.0	81.3	9999	63.0	9999	1800	9999	61.9	75.2	95.0	62.0
1900	9999	62.5	70.9	80.3	9999	63.0	9999	1900	9999	62.0	75.5	96.9	62.0
2000	9999	62.3	72.1	81.7	9999	63.3	9999	2000	9999	62.0	75.5	96.9	62.0
2100	9999	62.0	72.3	82.9	9999	63.0	9999	2100	9999	61.2	75.5	96.5	62.6
2200	9999	61.9	72.1	80.0	9999	63.3	9999	2200	9999	61.2	76.2	97.9	62.9
2300	9999	61.5	71.8	77.0	9999	62.8	9999	2300	9999	60.6	77.6	98.2	61.4
2400	9999	61.3	71.9	76.6	9999	62.9	9999	2400	9999	60.6	77.6	97.2	61.5

9999 OR 9999 -- INSTRUMENT MALFUNCTION

TABLE 102. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 13, 1979

TIME	COOLING CANAL				UPSTREAM SENSORS				DOWNSTREAM SENSORS				
	UPSTREAM	INTAKE	COLD DISCHARGE	END	A	B	C	D	A	B	C	D	
100	9999	60.7	74.0	76.5	62.7	61.6	63.4	64.9	61.0	71.2	77.0	62.4	61.0
200	9999	60.9	72.5	72.9	62.6	61.6	63.0	64.9	61.0	71.3	76.9	62.3	61.0
300	9999	60.9	71.5	71.5	62.6	61.6	62.6	64.9	61.0	71.3	77.0	62.3	61.0
400	9999	61.3	71.9	70.5	62.6	61.3	62.3	64.9	61.0	71.2	78.0	62.5	60.6
500	9999	60.9	71.6	70.3	62.6	61.3	62.3	64.9	61.0	71.2	77.1	62.3	60.6
600	9999	61.2	72.0	70.5	62.6	61.1	62.3	64.9	61.0	71.5	77.6	62.4	60.6
700	9999	61.0	69.9	68.5	62.6	60.6	61.5	64.9	60.8	71.2	77.6	62.4	60.6
800	9999	60.9	69.2	68.0	62.6	60.6	61.5	64.9	60.6	71.0	77.5	61.9	60.6
900	9999	60.7	68.6	67.5	62.5	60.5	61.4	64.9	60.5	72.3	79.5	62.3	60.3
1000	9999	60.9	69.1	68.5	62.6	60.5	61.3	64.9	60.5	72.1	80.0	62.1	60.3
1100	9999	60.9	69.5	70.3	62.6	60.5	61.3	64.9	60.5	72.4	80.5	62.3	60.1
1200	9999	61.1	69.4	72.5	62.5	60.5	61.1	64.9	60.5	72.4	81.4	61.3	60.1
1300	9999	61.4	69.4	75.5	62.5	60.5	61.0	64.9	60.5	72.3	84.0	62.5	60.1
1400	9999	61.5	69.4	75.7	62.5	60.5	60.9	64.9	60.5	72.3	84.0	62.5	60.1
1500	9999	61.5	69.6	75.6	62.4	60.5	60.9	64.9	60.5	72.5	84.5	62.5	60.3
1600	9999	61.5	71.0	76.0	62.4	60.5	60.6	64.9	60.5	72.5	89.6	62.5	60.2
1700	9999	61.6	70.3	75.0	62.4	60.5	60.6	64.9	60.5	74.6	89.5	61.5	60.4
1800	9999	61.3	71.6	76.0	62.3	60.5	60.5	64.9	60.5	76.7	89.6	61.4	60.4
1900	9999	61.3	71.6	76.5	62.5	60.5	60.4	64.9	60.5	76.0	90.3	61.9	60.4
2000	9999	61.5	70.7	76.0	62.5	60.5	60.5	64.9	60.5	77.5	91.2	62.4	60.4
2100	9999	61.0	70.6	76.1	62.4	60.5	60.6	64.9	60.5	78.5	93.0	62.5	60.5
2200	9999	60.9	72.4	76.5	62.3	60.6	60.6	64.9	60.5	78.5	95.4	62.3	60.5
2300	9999	61.0	71.1	76.4	62.4	60.9	60.6	64.9	60.5	78.6	95.5	62.4	60.5
2400	9999	61.0	71.5	77.1	62.4	61.0	60.6	64.9	60.5	79.3	95.5	62.5	60.5

TABLE 103. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 14, 1979

TIME	COOLING CANAL				UPSTREAM SENSORS				DOWNSTREAM SENSORS				
	UPSTREAM	INTAKE	COLD DISCHARGE	END	A	B	C	D	A	B	C	D	
100	9999	61.0	71.2	77.0	62.4	61.0	63.5	64.9	61.0	71.2	77.0	62.4	61.0
200	9999	61.0	71.3	76.9	62.3	61.0	63.5	64.9	61.0	71.3	76.9	62.3	61.0
300	9999	61.0	71.3	77.0	62.3	61.0	63.5	64.9	61.0	71.3	77.0	62.3	61.0
400	9999	61.0	71.2	78.0	62.5	60.7	63.5	64.9	61.0	71.2	78.0	62.5	60.6
500	9999	61.0	71.2	77.1	62.3	60.7	63.5	64.9	61.0	71.2	77.1	62.3	60.6
600	9999	61.0	71.5	77.6	62.4	60.8	63.5	64.9	61.0	71.5	77.6	62.4	60.8
700	9999	60.8	71.2	77.6	62.4	60.4	63.5	64.9	60.8	71.2	77.6	62.4	60.6
800	9999	60.6	71.0	77.5	61.9	60.5	63.5	64.9	60.6	71.0	77.5	61.9	60.6
900	9999	60.5	72.3	79.5	62.3	60.3	63.5	64.9	60.5	72.3	79.5	62.3	60.3
1000	9999	60.5	72.1	80.0	62.1	60.0	63.5	64.9	60.5	72.1	80.0	62.1	60.0
1100	9999	60.5	72.4	80.5	62.3	60.1	63.5	64.9	60.5	72.4	80.5	62.3	60.1
1200	9999	60.5	72.4	81.4	61.3	60.1	63.5	64.9	60.5	72.4	81.4	61.3	60.1
1300	9999	60.5	72.3	84.0	62.5	60.1	63.5	64.9	60.5	72.3	84.0	62.5	60.1
1400	9999	60.5	72.3	84.0	62.5	60.1	63.5	64.9	60.5	72.3	84.0	62.5	60.1
1500	9999	60.5	72.5	84.5	62.5	60.3	63.5	64.9	60.5	72.5	84.5	62.5	60.3
1600	9999	60.7	74.6	89.5	61.5	60.4	63.5	64.9	60.7	74.6	89.5	61.5	60.4
1700	9999	60.8	74.6	89.5	61.5	60.4	63.5	64.9	60.8	74.6	89.5	61.5	60.4
1800	9999	60.9	76.7	89.6	61.4	60.4	63.5	64.9	60.9	76.7	89.6	61.4	60.4
1900	9999	60.3	76.0	90.3	61.9	60.4	63.5	64.9	60.3	76.0	90.3	61.9	60.4
2000	9999	60.7	77.5	91.2	62.4	60.4	63.5	64.9	60.7	77.5	91.2	62.4	60.4
2100	9999	60.5	78.5	93.0	62.5	60.5	63.5	64.9	60.5	78.5	93.0	62.5	60.5
2200	9999	60.5	78.5	94.5	62.3	60.5	63.5	64.9	60.5	78.5	94.5	62.3	60.5
2300	9999	60.5	78.5	95.4	62.3	60.5	63.5	64.9	60.5	78.5	95.4	62.3	60.5
2400	9999	60.5	78.6	95.5	62.4	60.5	63.5	64.9	60.5	78.6	95.5	62.4	60.5

TABLE 104. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 15, 1979

TIME	COOLING CANAL				UPSTREAM SENSORS				DOWNSTREAM SENSORS				
	UPSTREAM	INTAKE	COLD DISCHARGE	END	A	B	C	D	A	B	C	D	
100	9999	60.4	79.5	95.6	62.3	60.4	61.5	63.9	61.0	78.1	95.6	62.1	61.4
200	9999	60.5	79.3	96.2	62.5	60.2	61.1	63.9	61.2	78.5	96.2	62.3	61.5
300	9999	60.0	80.0	97.0	62.5	60.0	60.6	63.9	61.2	78.9	96.5	62.3	61.4
400	9999	59.8	79.9	96.9	62.2	59.9	60.6	63.9	61.0	79.3	97.0	62.2	61.4
500	9999	59.7	79.5	96.4	62.4	59.7	60.7	63.9	61.0	79.5	97.5	62.1	61.2
600	9999	59.6	79.3	96.3	62.3	59.5	60.4	63.9	61.0	79.9	98.2	62.2	61.0
700	9999	59.5	79.1	95.7	62.4	59.4	60.1	63.9	61.0	80.0	98.5	62.2	60.8
800	9999	59.1	79.1	95.6	62.4	59.2	60.0	63.9	60.9	80.5	98.6	62.2	60.5
900	9999	59.2	79.2	96.7	62.3	59.2	59.6	63.9	61.0	80.7	99.0	62.2	60.5
1000	9999	59.2	79.9	98.0	62.3	59.2	59.7	63.9	61.1	82.0	99.6	62.1	60.5
1100	9999	59.2	80.1	95.5	62.3	59.3	59.8	63.9	61.5	82.0	99.6	62.1	60.5
1200	9999	59.5	80.5	90.0	62.4	59.5	60.0	63.9	61.6	82.6	100.5	62.3	60.5
1300	9999	59.9	81.3	86.9	62.4	59.5	60.4	63.9	61.6	84.1	101.2	62.4	60.5
1400	9999	60.3	81.7	87.2	62.3	59.7	60.3	63.9	61.7	84.7	102.5	62.4	60.5
1500	9999	60.2	82.4	88.0	62.3	59.9	60.3	63.9	62.0	84.5	102.5	62.4	60.5
1600	9999	60.5	81.0	88.0	62.3	59.9	60.5	63.9	62.0	84.5	103.5	62.5	60.6
1700	9999	60.6	78.9	89.6	62.3	60.0	60.5	63.9	62.1	84.8	103.4	62.4	60.7
1800	9999	61.0	77.2	90.5	62.3	60.1	60.6	63.9	62.2	84.8	105.6	62.4	61.0
1900	9999	61.0	77.0	90.4	62.2	60.2	60.6	63.9	62.2	84.8	105.6	62.4	61.0
2000	9999	60.5	77.8	91.6	62.2	60.5	60.6	63.9	62.2	84.5	105.6	62.4	61.0
2100	9999	60.5	77.5	91.6	62.1	60.6	60.9	63.9	62.1	84.3	107.7	62.4	61.5
2200	9999	60.6	77.7	93.0	62.1	60.9	60.9	63.9	62.0	84.5	101.5	62.4	61.7
2300	9999	60.8	77.7	93.7	62.2	61.0	61.0	63.9	62.0	84.3	99.5	62.4	61.7
2400	9999	60.7	78.0	94.4	62.1	61.1	60.8	63.9	62.0	83.7	97.1	62.3	62.3

9999 OR 9999 -- INSTRUMENT MALFUNCTION

TABLE 106. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 17, 1979

COOLING CANAL		COOLING CANAL		COOLING CANAL		COOLING CANAL		COOLING CANAL	
TIME	UPSTREAM	INTAKE	TEMP	DISCHARGE	TEMP	DISCHARGE	TEMP	DISCHARGE	TEMP
100	9999	62.5	83.1	26.7	62.3	62.1	62.1	9999	9999
200	9999	62.5	82.3	95.7	62.2	62.1	62.1	9999	9999
300	9999	62.5	82.2	95.7	62.2	62.1	62.1	9999	9999
400	9999	62.5	81.4	75.1	62.3	62.9	61.6	9999	9999
500	9999	62.3	80.3	95.5	62.2	62.9	61.4	9999	9999
600	9999	62.2	79.9	94.3	62.1	62.9	61.1	9999	9999
700	9999	62.0	79.5	94.2	62.7	62.9	61.9	9999	9999
800	9999	61.9	79.2	93.6	62.7	62.7	61.8	9999	9999
900	9999	61.7	79.1	93.5	62.7	62.5	61.8	9999	9999
1000	9999	61.7	79.1	93.4	62.8	62.4	62.0	9999	9999
1100	9999	62.0	79.5	93.5	62.7	62.4	62.1	9999	9999
1200	9999	62.1	79.8	94.0	62.7	62.4	62.3	9999	9999
1300	9999	62.3	80.5	75.5	62.6	62.5	62.5	9999	9999
1400	9999	62.5	81.0	46.3	62.7	62.8	62.6	9999	9999
1500	9999	63.0	81.2	97.0	62.9	62.9	62.8	9999	9999
1600	9999	63.0	81.3	95.1	63.0	63.0	63.0	9999	9999
1700	9999	63.0	81.5	97.0	63.0	63.0	63.0	9999	9999
1800	9999	63.0	82.3	98.1	63.0	63.0	63.0	9999	9999
1900	9999	63.0	82.9	99.0	63.0	63.1	63.0	9999	9999
2000	9999	63.0	83.0	99.1	63.0	63.1	63.2	9999	9999
2100	9999	63.0	83.2	99.3	63.0	63.2	63.4	9999	9999
2200	9999	62.9	84.0	99.7	63.0	63.5	63.6	9999	9999
2300	9999	63.0	84.2	100.0	63.0	63.7	63.9	9999	9999
2400	9999	63.2	84.5	100.6	63.1	64.2	64.0	9999	9999

TABLE 107. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 18, 1979

COOLING CANAL		COOLING CANAL		COOLING CANAL		COOLING CANAL		COOLING CANAL	
TIME	UPSTREAM	INTAKE	TEMP	DISCHARGE	TEMP	DISCHARGE	TEMP	DISCHARGE	TEMP
100	9999	61.7	83.4	107.4	63.1	63.1	63.1	9999	9999
200	9999	63.5	83.6	99.9	63.0	64.0	63.6	9999	9999
300	9999	63.5	83.7	120.3	63.1	63.9	63.5	9999	9999
400	9999	63.7	84.0	100.3	63.1	64.0	63.4	9999	9999
500	9999	63.7	84.7	107.5	63.1	64.0	63.2	9999	9999
600	9999	63.6	84.0	100.5	63.0	64.0	63.1	9999	9999
700	9999	63.5	84.0	100.5	63.1	63.9	63.1	9999	9999
800	9999	63.5	84.4	100.6	63.1	63.0	63.0	9999	9999
900	9999	63.6	84.2	101.0	63.1	63.6	63.1	9999	9999
1000	9999	63.7	84.7	102.4	63.1	63.8	63.3	9999	9999
1100	9999	63.7	84.0	102.5	63.1	64.0	63.3	9999	9999
1200	9999	64.2	84.6	104.5	63.1	64.1	63.4	9999	9999
1300	9999	64.5	84.2	105.5	63.1	64.4	63.5	9999	9999
1400	9999	64.8	84.1	106.1	63.2	64.5	63.5	9999	9999
1500	9999	65.0	84.2	105.8	63.2	64.7	63.5	9999	9999
1600	9999	65.1	84.0	106.5	63.2	64.8	63.4	9999	9999
1700	9999	65.2	84.0	106.5	63.2	64.9	63.4	9999	9999
1800	9999	65.2	84.0	106.5	63.2	64.9	63.4	9999	9999
1900	9999	65.3	84.0	106.5	63.2	64.9	63.4	9999	9999
2000	9999	65.3	84.0	106.5	63.2	64.9	63.4	9999	9999
2100	9999	65.3	84.0	106.5	63.2	64.9	63.4	9999	9999
2200	9999	65.3	84.0	106.5	63.2	64.9	63.4	9999	9999
2300	9999	65.3	84.0	106.5	63.2	64.9	63.4	9999	9999
2400	9999	65.3	84.0	106.5	63.2	64.9	63.4	9999	9999

TABLE 108. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 19, 1979

COOLING CANAL		COOLING CANAL		COOLING CANAL		COOLING CANAL		COOLING CANAL	
TIME	UPSTREAM	INTAKE	TEMP	DISCHARGE	TEMP	DISCHARGE	TEMP	DISCHARGE	TEMP
100	9999	65.8	85.9	106.4	63.6	65.1	64.3	9999	9999
200	9999	65.9	85.9	106.1	63.2	65.9	64.3	9999	9999
300	9999	66.0	85.5	106.0	63.2	66.0	64.4	9999	9999
400	9999	66.7	85.4	105.9	63.3	65.8	64.3	9999	9999
500	9999	65.6	85.3	105.5	63.1	64.1	64.0	9999	9999
600	9999	65.5	85.0	105.5	63.1	63.9	64.0	9999	9999
700	9999	65.3	85.2	105.2	63.1	63.0	64.1	9999	9999
800	9999	65.0	84.5	104.9	63.2	64.0	64.1	9999	9999
900	9999	65.5	84.0	104.4	63.2	64.5	64.1	9999	9999
1000	9999	65.5	84.0	103.7	63.4	64.4	64.1	9999	9999
1100	9999	65.6	84.0	103.6	63.3	65.1	64.4	9999	9999
1200	9999	66.7	84.2	103.8	63.4	65.4	64.5	9999	9999
1300	9999	66.0	84.7	104.3	63.4	65.5	64.5	9999	9999
1400	9999	65.4	85.2	104.7	63.5	65.6	64.5	9999	9999
1500	9999	66.7	85.2	99.99	63.5	65.7	64.5	9999	9999
1600	9999	67.0	85.2	99.99	63.5	66.0	64.5	9999	9999
1700	9999	67.3	85.5	99.99	63.5	66.0	64.5	9999	9999
1800	9999	67.2	85.4	99.99	63.5	66.0	64.5	9999	9999
1900	9999	67.3	85.5	99.99	63.5	66.0	64.5	9999	9999
2000	9999	67.3	85.2	99.99	63.5	66.0	64.5	9999	9999
2100	9999	67.3	85.0	99.99	63.5	66.2	64.9	9999	9999
2200	9999	65.1	84.9	99.99	63.5	66.5	65.4	9999	9999
2300	9999	67.0	84.5	99.99	63.5	67.0	65.6	9999	9999
2400	9999	67.3	84.5	99.99	63.5	66.9	65.6	9999	9999

TABLE 109. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 20, 1979

COOLING CANAL		COOLING CANAL		COOLING CANAL		COOLING CANAL		COOLING CANAL	
TIME	UPSTREAM	INTAKE	TEMP	DISCHARGE	TEMP	DISCHARGE	TEMP	DISCHARGE	TEMP
100	9999	65.0	84.5	99.99	63.5	67.0	65.5	9999	9999
200	9999	65.5	84.4	99.99	63.5	67.1	65.5	9999	9999
300	9999	65.5	84.1	99.99	63.5	67.1	65.5	9999	9999
400	9999	65.1	83.9	99.99	63.4	66.8	65.5	9999	9999
500	9999	65.2	83.4	99.99	63.4	66.5	65.5	9999	9999
600	9999	67.0	82.0	99.99	63.4	66.5	65.2	9999	9999
700	9999	64.8	81.5	99.99	63.4	66.5	65.1	9999	9999
800	9999	65.0	81.5	99.99	63.5	66.4	65.1	9999	9999
900	9999	65.3	81.4	99.99	63.5	66.4	65.1	9999	9999
1000	9999	64.5	80.0	99.99	63.5	66.0	65.0	9999	9999
1100	9999	64.6	80.5	99.99	63.5	66.0	65.0	9999	9999
1200	9999	64.9	81.2	99.99	63.5	65.4	65.0	9999	9999
1300	9999	65.4	81.2	99.99	63.5	65.4	65.0	9999	9999
1400	9999	65.6	81.0	99.99	63.5	65.5	65.0	9999	9999
1500	9999	65.8	82.6	99.99	63.9	66.7	65.2	9999	9999
1600	9999	65.3	83.0	99.99	64.0	66.8	65.1	9999	9999
1700	9999	65.4	83.5	99.99	64.0	66.8	65.1	9999	9999
1800	9999	65.3	83.0	99.99	64.0	66.8	65.0	9999	9999
1900	9999	65.3	83.1	99.99	64.1	66.9	65.2	9999	9999
2000	9999	65.3	82.6	99.99	64.0	67.0	65.4	9999	9999
2100	9999	65.3	82.3	99.99	64.0	67.1	65.5	9999	9999
2200	9999	65.2	82.3	99.99	64.0	67.1	65.6	9999	9999
2300	9999	65.3	82.2	99.99	64.0	67.2	65.6	9999	9999
2400	9999	65.3	81.8	99.99	64.0	67.3	65.7	9999	9999

9999 24 9999 -- INSTRUMENT MALFUNCTION

TABLE 110. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 21, 1979

TIME	COOLING				UPSTREAM SENSORS				DOWNSTREAM SENSORS					
	UPSTREAM	INTAKE	COLD DISCHARGE	END	A	B	C	U	A	B	C	U		
													CONAL	DI
100	65.0	67.3	9999	81.5	64.0	67.3	65.6	9999	65.9	66.1	66.1	65.9	64.9	9999
200	65.0	67.2	9999	81.0	64.0	67.2	65.6	9999	65.9	66.1	66.1	65.5	64.9	9999
300	65.9	67.1	9999	81.0	64.0	67.0	65.6	9999	65.8	66.0	66.0	65.5	64.9	9999
400	65.8	67.0	9999	80.7	64.0	66.9	65.0	9999	65.5	66.0	66.0	65.5	64.9	9999
500	64.5	67.0	9999	80.5	64.0	66.9	65.0	9999	65.5	66.0	66.0	65.5	64.9	9999
600	64.5	67.0	9999	80.5	64.0	66.9	65.0	9999	65.5	66.0	66.0	65.5	64.9	9999
700	63.7	66.5	9999	79.3	64.0	66.3	64.9	9999	65.1	65.7	65.7	64.5	64.0	9999
800	63.7	66.2	9999	79.6	64.0	66.2	64.9	9999	65.1	65.7	65.7	64.5	64.0	9999
900	63.3	66.0	9999	80.0	64.0	66.2	64.9	9999	65.1	65.7	65.7	64.5	64.0	9999
1000	63.0	66.0	9999	80.2	64.0	66.3	64.9	9999	65.1	65.7	65.7	64.5	64.0	9999
1100	63.0	66.0	9999	80.2	64.0	66.3	64.9	9999	65.1	65.7	65.7	64.5	64.0	9999
1200	63.0	66.0	9999	81.5	64.0	66.3	64.9	9999	65.1	65.7	65.7	64.5	64.0	9999
1300	63.0	66.0	9999	81.5	64.0	66.3	64.9	9999	65.1	65.7	65.7	64.5	64.0	9999
1400	62.9	66.0	9999	82.4	64.0	66.3	64.9	9999	65.1	65.7	65.7	64.5	64.0	9999
1500	63.3	66.3	9999	83.0	64.0	66.3	64.9	9999	65.0	65.9	65.9	64.5	64.0	9999
1600	63.4	66.4	9999	83.1	64.0	66.3	64.9	9999	65.0	65.9	65.9	64.5	64.0	9999
1700	63.8	66.5	9999	83.4	64.0	66.3	64.9	9999	65.2	65.2	65.2	64.8	64.0	9999
1800	63.9	66.5	9999	83.8	64.0	66.3	64.9	9999	65.2	65.2	65.2	64.8	64.0	9999
1900	64.2	66.5	9999	83.6	64.0	66.3	64.9	9999	65.2	65.2	65.2	64.8	64.0	9999
2000	64.3	66.2	9999	83.5	64.0	66.3	64.9	9999	65.3	65.3	65.3	64.8	64.0	9999
2100	64.8	66.0	9999	82.5	64.0	66.4	64.9	9999	65.3	65.3	65.3	64.8	64.0	9999
2200	65.8	66.0	9999	82.5	64.0	66.4	64.9	9999	65.3	65.3	65.3	64.8	64.0	9999
2300	65.8	66.0	9999	82.4	64.0	66.4	64.9	9999	65.3	65.3	65.3	64.8	64.0	9999
2400	65.8	66.1	9999	81.9	64.0	66.4	64.9	9999	65.3	65.3	65.3	64.8	64.0	9999

TABLE 112. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 23, 1979

TIME	COOLING				UPSTREAM SENSORS				DOWNSTREAM SENSORS					
	UPSTREAM	INTAKE	COLD DISCHARGE	END	A	B	C	U	A	B	C	U		
													CONAL	DI
100	65.9	65.8	9999	84.1	64.0	66.7	64.7	9999	64.0	64.2	64.2	63.1	63.6	9999
200	66.0	66.0	9999	83.5	64.0	66.0	64.0	9999	62.0	62.0	62.0	63.0	63.5	9999
300	65.8	66.0	9999	83.6	64.0	66.0	64.0	9999	61.6	61.5	61.5	62.7	63.5	9999
400	65.4	65.8	9999	83.4	64.0	65.8	64.7	9999	61.2	61.5	61.5	62.5	63.0	9999
500	65.1	65.6	9999	83.3	64.0	65.8	64.7	9999	61.2	61.2	61.2	62.5	62.9	9999
600	64.5	65.5	9999	82.5	64.0	65.5	64.7	9999	61.2	61.2	61.2	62.5	62.9	9999
700	64.3	65.2	9999	82.3	64.0	65.2	64.5	9999	61.2	61.2	61.2	62.9	62.9	9999
800	64.0	65.0	9999	82.3	64.0	65.0	64.5	9999	61.2	61.2	61.2	62.9	62.9	9999
900	63.5	64.7	9999	81.5	64.0	64.8	64.2	9999	61.2	61.2	61.2	62.9	62.9	9999
1000	63.6	64.7	9999	82.0	64.0	64.7	64.2	9999	61.2	61.2	61.2	62.9	62.9	9999
1100	63.3	64.5	9999	81.8	64.0	64.6	64.1	9999	61.2	61.2	61.2	62.9	62.9	9999
1200	63.3	64.5	9999	81.7	64.0	64.5	64.0	9999	61.2	61.2	61.2	62.9	62.9	9999
1300	63.2	64.6	9999	81.6	64.0	64.5	64.1	9999	61.2	61.2	61.2	62.9	62.9	9999
1400	63.0	64.7	9999	82.0	64.0	64.5	64.1	9999	61.2	61.2	61.2	62.9	62.9	9999
1500	62.8	64.5	9999	81.9	64.0	64.3	64.0	9999	61.2	61.2	61.2	62.9	62.9	9999
1600	62.6	64.2	9999	81.4	64.0	64.0	63.7	9999	61.2	61.2	61.2	62.9	62.9	9999
1700	62.6	64.8	9999	80.4	64.0	64.0	63.7	9999	61.2	61.2	61.2	62.9	62.9	9999
1800	62.5	64.5	9999	81.2	64.0	63.9	63.5	9999	61.2	61.2	61.2	62.9	62.9	9999
1900	62.5	64.5	9999	81.0	64.0	63.7	63.4	9999	61.2	61.2	61.2	62.9	62.9	9999
2000	62.5	64.2	9999	81.0	64.0	63.4	63.4	9999	61.2	61.2	61.2	62.9	62.9	9999
2100	62.1	63.0	9999	79.5	64.0	63.0	63.5	9999	61.2	61.2	61.2	62.9	62.9	9999
2200	62.0	62.8	9999	79.6	64.0	62.8	63.5	9999	61.2	61.2	61.2	62.9	62.9	9999
2300	62.0	62.5	9999	79.2	64.0	62.5	63.5	9999	61.2	61.2	61.2	62.9	62.9	9999
2400	61.0	62.4	9999	79.0	64.0	62.5	63.4	9999	61.2	61.2	61.2	62.9	62.9	9999

9999 FOR 9.29 -- INSTRUMENT MALFUNCTION

TABLE 114. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 25, 1979

Table with columns: TIME, UPSTREAM INTAKE, COOLING CANAL FLOW, DISCHARGE, A, B, C, D, UPSTREAM, INTAKE, DISCHARGE, A, B, C, D. Includes sub-headers for COOLING CANAL FLOW and DOWNSTREAM SENSORS.

TABLE 115. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 26, 1979

Table with columns: TIME, UPSTREAM INTAKE, COOLING CANAL FLOW, DISCHARGE, A, B, C, D, UPSTREAM, INTAKE, DISCHARGE, A, B, C, D. Includes sub-headers for COOLING CANAL FLOW and DOWNSTREAM SENSORS.

TABLE 116. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 27, 1979

Table with columns: TIME, UPSTREAM INTAKE, COOLING CANAL FLOW, DISCHARGE, A, B, C, D, UPSTREAM, INTAKE, DISCHARGE, A, B, C, D. Includes sub-headers for COOLING CANAL FLOW and DOWNSTREAM SENSORS.

TABLE 117. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 28, 1979

Table with columns: TIME, UPSTREAM INTAKE, COOLING CANAL FLOW, DISCHARGE, A, B, C, D, UPSTREAM, INTAKE, DISCHARGE, A, B, C, D. Includes sub-headers for COOLING CANAL FLOW and DOWNSTREAM SENSORS.

\*9999 OR 9999 -- INSTRUMENT MALFUNCTION

TABLE 119. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 30, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL		DISCHARGE	TIME	UPSTREAM INTAKE	COOLING CANAL		DISCHARGE	TIME	UPSTREAM INTAKE	COOLING CANAL		DISCHARGE
		COLD	END				COLD	END				COLD	END	
107	63.1	65.3	69.99	64.6	1000	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
200	63.1	65.5	69.99	64.6	1100	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
300	63.1	65.5	69.99	64.6	1200	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
400	63.1	65.5	69.99	64.6	1300	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
500	62.9	65.6	69.99	64.6	1400	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
600	62.6	65.5	69.99	64.6	1500	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
700	62.6	65.6	69.99	64.6	1600	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
800	63.3	65.6	69.99	64.6	1700	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
900	63.9	65.4	69.99	64.1	1800	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
1000	63.6	65.3	69.99	64.1	1900	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
1100	63.5	65.3	69.99	64.1	2000	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
1200	63.3	65.1	69.99	64.3	2100	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
1300	63.4	65.3	69.99	64.3	2200	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
1400	63.4	65.2	69.99	64.3	2300	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
1500	63.6	65.5	69.99	64.5	2400	63.4	66.5	69.99	65.9	65.2	64.4	66.4	69.99	
1600	62.5	65.7	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
1700	62.0	66.2	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
1800	62.0	66.3	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
1900	62.5	66.4	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
2000	62.5	66.4	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
2100	62.5	66.4	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
2200	62.6	66.4	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
2300	63.3	66.4	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
2400	63.4	66.5	69.99	64.5					65.9	65.5	64.5	66.2	69.99	

TABLE 118. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 29, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL		DISCHARGE	TIME	UPSTREAM INTAKE	COOLING CANAL		DISCHARGE	TIME	UPSTREAM INTAKE	COOLING CANAL		DISCHARGE
		COLD	END				COLD	END				COLD	END	
107	63.1	65.3	69.99	64.6	1000	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
200	63.1	65.5	69.99	64.6	1100	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
300	63.1	65.5	69.99	64.6	1200	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
400	63.1	65.5	69.99	64.6	1300	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
500	62.9	65.6	69.99	64.6	1400	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
600	62.6	65.5	69.99	64.6	1500	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
700	62.6	65.6	69.99	64.6	1600	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
800	63.3	65.6	69.99	64.6	1700	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
900	63.9	65.4	69.99	64.1	1800	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
1000	63.6	65.3	69.99	64.1	1900	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
1100	63.5	65.3	69.99	64.1	2000	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
1200	63.3	65.1	69.99	64.3	2100	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
1300	63.4	65.3	69.99	64.3	2200	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
1400	63.4	65.2	69.99	64.3	2300	63.0	65.3	69.99	65.7	64.7	64.0	65.2	69.99	
1500	63.6	65.5	69.99	64.5	2400	63.4	66.5	69.99	65.9	65.2	64.4	66.4	69.99	
1600	62.5	65.7	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
1700	62.0	66.2	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
1800	62.0	66.3	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
1900	62.5	66.4	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
2000	62.5	66.4	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
2100	62.5	66.4	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
2200	62.6	66.4	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
2300	63.3	66.4	69.99	64.5					65.9	65.5	64.5	66.2	69.99	
2400	63.4	66.5	69.99	64.5					65.9	65.5	64.5	66.2	69.99	

TABLE 120. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, MAY 31, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL		DISCHARGE	TIME	UPSTREAM INTAKE	COOLING CANAL		DISCHARGE	TIME	UPSTREAM INTAKE	COOLING CANAL		DISCHARGE
		COLD	END				COLD	END				COLD	END	
107	65.0	68.5	69.99	66.5	1000	65.0	68.5	69.99	66.0	66.0	66.0	66.0	69.99	
200	65.0	68.5	69.99	66.5	1100	65.0	68.5	69.99	66.0	66.0	66.0	66.0	69.99	
300	65.0	68.5	69.99	66.5	1200	65.0	68.5	69.99	66.0	66.0	66.0	66.0	69.99	
400	65.0	68.5	69.99	66.5	1300	65.0	68.5	69.99	66.0	66.0	66.0	66.0	69.99	
500	65.0	68.5	69.99	66.5	1400	65.0	68.5	69.99	66.0	66.0	66.0	66.0	69.99	
600	65.0	68.5	69.99	66.5	1500	65.0	68.5	69.99	66.0	66.0	66.0	66.0	69.99	
700	65.0	68.5	69.99	66.5	1600	65.0	68.5	69.99	66.0	66.0	66.0	66.0	69.99	
800	65.0	68.5	69.99	66.5	1700	65.0	68.5	69.99	66.0	66.0	66.0	66.0	69.99	
900	65.0	68.5	69.99	66.5	1800	65.0	68.5	69.99	66.0	66.0	66.0	66.0	69.99	
1000	66.2	69.5	69.99	67.4	1900	66.2	69.5	69.99	66.0	66.0	66.0	66.0	69.99	
1100	66.2	69.5	69.99	67.4	2000	66.2	69.5	69.99	66.0	66.0	66.0	66.0	69.99	
1200	66.0	69.4	69.99	67.5	2100	66.0	69.4	69.99	66.0	66.0	66.0	66.0	69.99	
1300	67.8	69.6	69.99	67.5	2200	67.8	69.6	69.99	66.0	66.0	66.0	66.0	69.99	
1400	68.0	69.5	69.99	67.5	2300	68.0	69.5	69.99	66.0	66.0	66.0	66.0	69.99	
1500	68.2	69.7	69.99	67.6	2400	68.2	69.7	69.99	66.0	66.0	66.0	66.0	69.99	
1600	68.4	69.9	69.99	67.7					66.0	66.0	66.0	66.0	69.99	
1700	68.8	70.0	69.99	67.7					66.0	66.0	66.0	66.0	69.99	
1800	68.9	70.0	69.99	67.8					66.0	66.0	66.0	66.0	69.99	
1900	68.8	70.0	69.99	67.8					66.0	66.0	66.0	66.0	69.99	
2000	68.6	69.9	69.99	67.7					66.0	66.0	66.0	66.0	69.99	
2100	68.6	69.9	69.99	67.7					66.0	66.0	66.0	66.0	69.99	
2200	68.6	69.7	69.99	67.7					66.0	66.0	66.0	66.0	69.99	
2300	68.7	69.7	69.99	67.6					66.0	66.0	66.0	66.0	69.99	
2400	68.5	69.5	69.99	67.6					66.0	66.0	66.0	66.0	69.99	

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TABLE 125. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JUNE 5, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL		DOWNSTREAM SENSORS		UPSTREAM INTAKE	DISCHARGE	DOWNSTREAM SENSORS			
		INTAKE	END	A	B			A	B		
100	70.4	72.0	86.6	70.5	70.7	69.99	9999	70.5	70.7	69.99	9999
200	73.4	72.1	85.2	70.5	70.6	69.99	9999	70.5	70.6	69.99	9999
300	71.1	72.1	84.5	70.6	71.0	69.99	9999	70.5	70.6	69.99	9999
400	73.4	72.3	85.5	70.3	71.7	69.99	9999	70.5	70.5	69.99	9999
500	70.5	72.2	84.2	70.6	70.6	69.99	9999	70.5	70.6	69.99	9999
600	70.6	72.2	88.1	70.6	70.9	69.99	9999	70.5	70.5	69.99	9999
700	70.2	72.2	83.0	70.5	70.6	69.99	9999	70.5	70.4	69.99	9999
800	70.0	72.0	83.4	70.5	70.5	69.99	9999	70.5	70.0	69.99	9999
900	70.3	72.1	89.3	70.6	70.2	69.99	9999	70.5	70.0	69.99	9999
1000	70.3	72.3	89.5	70.6	70.4	69.99	9999	70.5	69.9	69.99	9999
1100	70.0	72.3	89.3	70.7	70.5	69.99	9999	70.5	69.9	69.99	9999
1200	70.0	72.5	89.4	70.3	70.5	69.99	9999	70.5	69.2	69.99	9999
1300	70.3	72.5	89.4	70.7	70.5	69.99	9999	70.5	70.5	69.99	9999
1400	70.1	72.9	89.7	70.9	70.6	69.99	9999	70.5	70.5	69.99	9999
1500	70.3	72.7	89.5	71.0	70.6	69.99	9999	70.5	70.0	69.99	9999
1600	70.0	73.0	89.3	70.8	70.4	69.99	9999	70.5	70.2	69.99	9999
1700	70.8	73.0	89.3	70.6	70.5	69.99	9999	70.5	70.5	69.99	9999
1800	70.8	73.4	89.3	70.6	70.6	69.99	9999	70.5	70.3	69.99	9999
1900	70.8	73.5	89.3	70.5	70.8	69.99	9999	70.5	70.3	69.99	9999
2000	70.4	73.3	89.8	70.6	70.8	69.99	9999	70.5	70.4	69.99	9999
2100	70.2	73.3	89.7	70.6	70.9	69.99	9999	70.6	70.4	69.99	9999
2200	70.1	72.7	89.5	70.6	70.6	69.99	9999	70.8	70.6	69.99	9999
2300	70.3	72.5	89.3	70.5	70.8	69.99	9999	70.3	70.5	69.99	9999
2400	70.0	72.5	89.6	70.5	70.6	69.99	9999	70.8	70.6	69.99	9999

TABLE 126. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JUNE 6, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL		DOWNSTREAM SENSORS		UPSTREAM INTAKE	DISCHARGE	DOWNSTREAM SENSORS			
		INTAKE	END	A	B			A	B		
100	73.3	72.2	85.3	70.3	70.6	69.99	9999	70.3	70.6	69.99	9999
200	69.8	72.2	84.3	70.5	70.6	69.99	9999	70.5	70.6	69.99	9999
300	69.7	72.2	87.5	70.5	70.6	69.99	9999	70.5	70.6	69.99	9999
400	69.7	72.0	87.2	70.5	70.5	69.99	9999	70.5	70.5	69.99	9999
500	69.6	71.9	85.5	70.5	70.6	69.99	9999	70.5	70.0	69.99	9999
600	69.6	71.9	85.5	70.5	70.6	69.99	9999	70.5	70.0	69.99	9999
700	69.4	71.5	85.6	70.5	70.4	69.99	9999	70.5	69.8	69.99	9999
800	69.4	71.5	85.5	70.5	70.0	69.99	9999	70.5	69.8	69.99	9999
900	69.2	71.5	85.5	70.5	70.0	69.99	9999	70.5	69.8	69.99	9999
1000	69.2	71.5	85.5	70.5	70.0	69.99	9999	70.5	69.8	69.99	9999
1100	69.2	71.5	85.5	70.5	70.0	69.99	9999	70.5	69.8	69.99	9999
1200	69.4	72.1	86.2	70.5	70.0	69.99	9999	70.5	69.6	69.99	9999
1300	69.4	72.5	89.4	70.5	70.5	69.99	9999	70.5	70.0	69.99	9999
1400	69.4	72.3	89.4	70.5	70.5	69.99	9999	70.5	70.0	69.99	9999
1500	69.5	72.3	89.4	70.5	70.0	69.99	9999	70.5	70.0	69.99	9999
1600	69.8	72.2	91.2	70.5	70.2	69.99	9999	70.5	69.6	69.99	9999
1700	70.0	72.3	91.6	70.5	70.5	69.99	9999	70.5	69.6	69.99	9999
1800	70.0	72.3	92.0	70.5	70.3	69.99	9999	70.5	69.7	69.99	9999
1900	70.3	72.4	92.0	70.5	70.3	69.99	9999	70.5	69.6	69.99	9999
2000	70.3	72.3	92.5	70.5	70.3	69.99	9999	70.5	69.6	69.99	9999
2100	70.1	71.7	91.8	70.1	70.6	69.99	9999	70.6	69.7	69.99	9999
2200	70.1	71.7	91.7	70.1	70.6	69.99	9999	70.6	69.9	69.99	9999
2300	70.3	71.4	91.5	70.5	70.5	69.99	9999	70.3	70.5	69.99	9999
2400	70.0	71.5	90.7	70.7	70.6	69.99	9999	70.8	70.6	69.99	9999

TABLE 127. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JUNE 7, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL		DOWNSTREAM SENSORS		UPSTREAM INTAKE	DISCHARGE	DOWNSTREAM SENSORS			
		INTAKE	END	A	B			A	B		
100	71.1	71.0	91.0	71.0	70.9	69.99	9999	71.0	70.8	69.99	9999
200	71.8	71.2	90.5	71.4	71.3	69.99	9999	71.5	70.5	69.99	9999
300	71.1	71.5	90.5	71.5	71.5	69.99	9999	71.5	71.1	69.99	9999
400	71.5	71.1	90.0	71.5	72.0	69.99	9999	71.5	71.1	69.99	9999
500	71.5	71.2	89.8	71.5	72.0	69.99	9999	71.5	71.1	69.99	9999
600	71.5	71.5	89.6	71.6	72.0	69.99	9999	71.5	71.1	69.99	9999
700	71.5	71.5	90.0	71.5	72.1	69.99	9999	71.5	71.1	69.99	9999
800	71.5	71.5	90.3	71.6	71.9	69.99	9999	71.5	70.7	69.99	9999
900	71.5	71.6	90.1	71.6	72.0	69.99	9999	71.5	70.5	69.99	9999
1000	71.3	71.3	89.9	71.5	71.8	69.99	9999	71.5	71.2	69.99	9999
1100	71.2	72.0	91.0	71.6	71.8	69.99	9999	71.6	71.2	69.99	9999
1200	71.2	72.0	91.0	71.6	71.8	69.99	9999	71.6	71.2	69.99	9999
1300	71.1	72.0	91.0	71.6	71.6	69.99	9999	71.6	71.2	69.99	9999
1400	71.6	72.4	91.5	71.6	71.6	69.99	9999	71.6	71.0	69.99	9999
1500	71.6	72.4	92.2	71.6	72.0	69.99	9999	71.6	71.0	69.99	9999
1600	71.6	72.5	92.3	71.7	72.0	69.99	9999	71.7	71.0	69.99	9999
1700	72.0	72.7	92.3	71.7	72.0	69.99	9999	71.7	71.0	69.99	9999
1800	72.0	72.8	92.3	71.9	72.1	69.99	9999	71.9	71.6	69.99	9999
1900	72.0	72.6	92.6	71.9	72.1	69.99	9999	71.9	71.2	69.99	9999
2000	72.0	72.3	92.6	71.3	72.2	69.99	9999	71.3	71.2	69.99	9999
2100	72.3	72.5	92.3	71.3	72.2	69.99	9999	71.3	71.3	69.99	9999
2200	72.3	72.3	92.6	72.0	72.1	69.99	9999	72.0	71.3	69.99	9999
2300	72.3	72.3	92.5	72.1	72.1	69.99	9999	72.1	71.7	69.99	9999
2400	72.0	72.3	92.6	72.2	72.2	69.99	9999	72.2	71.5	69.99	9999

TABLE 128. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JUNE 8, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL		DOWNSTREAM SENSORS		UPSTREAM INTAKE	DISCHARGE	DOWNSTREAM SENSORS			
		INTAKE	END	A	B			A	B		
100	72.3	72.3	92.5	72.3	72.3	69.99	9999	72.3	72.6	69.99	9999
200	72.2	72.3	92.0	72.2	72.3	69.99	9999	72.2	72.6	69.99	9999
300	72.5	72.5	92.2	72.7	72.3	69.99	9999	72.1	73.0	69.99	9999
400	72.6	72.5	92.0	72.6	72.5	69.99	9999	72.2	73.0	69.99	9999
500	72.6	72.6	91.9	72.6	72.6	69.99	9999	72.2	73.0	69.99	9999
600	72.8	72.8	91.8	72.8	72.8	69.99	9999	72.5	73.2	69.99	9999
700	72.7	73.0	91.3	72.3	73.0	69.99	9999	72.7	72.2	69.99	9999
800	72.7	73.0	91.5	72.4	73.0	69.99	9999	72.7	72.2	69.99	9999
900	72.7	73.0	90.8	72.3	73.0	69.99	9999	72.6	71.7	69.99	9999
1000	72.3	73.0	91.1	72.3	73.0	69.99	9999	72.6	71.7	69.99	9999
1100	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.6	71.7	69.99	9999
1200	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999
1300	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999
1400	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999
1500	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999
1600	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999
1700	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999
1800	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999
1900	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999
2000	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999
2100	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999
2200	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999
2300	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999
2400	72.5	73.0	91.1	72.5	73.0	69.99	9999	72.5	73.5	69.99	9999



TABLE 129. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JUNE 9, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL			DOWNSTREAM SENSORS				
			DISCHARGE	A	B	C	A	B	C	
103	72.6	71.7	69999	72.5	73.3	73.1	69999	72.5	73.5	73.6
403	74.9	72.1	69999	72.5	73.5	73.3	69999	72.5	73.9	73.8
903	72.9	72.0	69999	72.5	73.5	73.3	69999	72.5	74.5	73.6
1303	73.3	72.0	69999	72.5	73.6	73.2	69999	72.4	74.7	73.6
1703	73.3	72.3	69999	72.5	73.7	73.1	69999	72.4	74.6	73.2
2103	72.5	72.3	69999	72.5	74.0	73.0	69999	72.4	74.5	73.5
2503	71.2	71.2	69999	72.3	73.8	72.9	69999	72.3	74.7	73.5
2903	71.6	72.0	69999	72.3	74.3	73.4	69999	72.3	74.6	73.6
3303	72.5	72.2	69999	72.5	73.6	73.6	69999	71.7	73.6	73.6
3703	74.5	72.2	69999	72.5	73.6	73.3	69999	71.5	73.0	73.3
4103	74.6	72.1	69999	72.5	73.5	72.8	69999	71.4	72.7	73.3
4503	72.4	72.4	69999	72.1	73.5	73.6	69999	71.4	72.7	73.0
4903	72.9	71.9	69999	72.1	74.0	72.3	69999	71.9	72.6	72.7
5303	72.2	71.5	69999	72.5	73.5	73.5	69999	71.0	72.4	72.5
5703	72.2	72.7	69999	72.5	73.4	73.4	69999	72.3	72.1	72.4
6103	74.5	73.5	69999	72.6	73.5	74.5	69999	72.7	72.2	72.4
6503	72.5	72.5	69999	71.1	74.0	74.5	69999	72.3	71.9	72.5
6903	72.0	72.1	69999	72.6	73.5	74.5	69999	72.3	71.9	72.4
7303	72.4	72.5	69999	72.5	73.6	74.5	69999	72.3	71.8	72.1
7703	72.3	72.5	69999	72.5	73.3	74.5	69999	72.3	71.6	72.0
8103	72.0	72.3	69999	72.7	73.3	74.5	69999	72.3	71.6	71.6
8503	72.3	72.3	69999	72.5	73.0	74.2	69999	72.3	71.0	71.5
8903	72.3	72.3	69999	71.0	74.0	73.7	69999	72.3	70.6	71.1
9303	72.4	72.4	69999	71.5	74.0	73.5	69999	72.3	70.3	71.2
9703	72.4	72.4	69999	72.5	73.5	73.6	69999	72.3	70.0	71.1

TABLE 130. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JUNE 10, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL			DOWNSTREAM SENSORS				
			DISCHARGE	A	B	C	A	B	C	
103	69999	72.4	69999	72.5	73.5	73.5	69999	72.5	73.5	73.6
403	69999	72.3	69999	72.5	73.5	73.3	69999	72.5	73.9	73.8
703	69999	72.4	69999	72.5	73.5	73.2	69999	72.4	74.5	73.6
1003	69999	72.4	69999	72.5	73.7	73.1	69999	72.4	74.6	73.2
1303	69999	72.4	69999	72.5	74.0	73.0	69999	72.4	74.5	73.5
1603	69999	72.3	69999	72.3	73.8	72.9	69999	72.3	74.7	73.5
1903	69999	71.8	69999	72.6	73.4	73.4	69999	72.3	74.6	73.6
2203	69999	71.7	69999	72.5	73.6	73.6	69999	71.7	73.6	73.6
2503	69999	71.5	69999	72.5	73.6	73.3	69999	71.5	73.0	73.3
2803	69999	71.4	69999	72.5	73.5	72.8	69999	71.4	72.7	73.0
3103	69999	71.4	69999	72.0	73.5	73.6	69999	71.4	72.7	73.0
3403	69999	71.9	69999	72.1	74.0	72.3	69999	71.9	72.6	72.7
3703	69999	71.0	69999	71.9	73.5	73.5	69999	71.0	72.4	72.5
4003	69999	71.4	69999	71.4	73.4	73.4	69999	72.3	72.1	72.4
4303	69999	70.8	69999	71.3	73.5	74.5	69999	72.7	72.2	72.4
4603	69999	70.5	69999	71.3	74.5	74.5	69999	72.3	71.9	72.5
4903	69999	70.5	69999	71.3	74.5	74.5	69999	72.3	71.9	72.4
5203	69999	70.3	69999	71.5	74.5	74.5	69999	72.3	71.8	72.1
5503	69999	70.2	69999	71.5	74.5	74.5	69999	72.3	71.6	72.0
5803	69999	70.2	69999	71.9	74.5	74.5	69999	72.3	71.6	71.6
6103	69999	69.7	69999	71.8	74.2	74.2	69999	72.3	71.0	71.5
6403	69999	69.5	69999	71.8	74.0	73.7	69999	72.3	70.6	71.1
6703	69999	69.2	69999	70.8	74.0	73.5	69999	72.3	70.3	71.2
7003	69999	68.9	69999	70.8	73.5	73.6	69999	72.3	70.0	71.1
7303	69999	68.5	69999	70.9	73.8	73.8	69999	72.3	70.8	71.0
7603	69999	68.5	69999	71.0	73.8	73.8	69999	72.3	70.8	71.0
7903	69999	68.5	69999	71.0	73.6	73.6	69999	72.3	70.8	71.0
8203	69999	68.5	69999	71.0	73.3	73.3	69999	72.3	70.8	71.0
8503	69999	68.5	69999	71.0	73.0	73.0	69999	72.3	70.8	71.0
8803	69999	68.5	69999	71.0	72.7	72.7	69999	72.3	70.8	71.0
9103	69999	68.5	69999	71.0	72.4	72.4	69999	72.3	70.8	71.0
9403	69999	68.5	69999	71.0	72.1	72.1	69999	72.3	70.8	71.0
9703	69999	68.5	69999	71.0	71.8	71.8	69999	72.3	70.8	71.0
10003	69999	68.5	69999	71.0	71.5	71.5	69999	72.3	70.8	71.0
10303	69999	68.5	69999	71.0	71.2	71.2	69999	72.3	70.8	71.0
10603	69999	68.5	69999	71.0	70.9	70.9	69999	72.3	70.8	71.0
10903	69999	68.5	69999	71.0	70.6	70.6	69999	72.3	70.8	71.0
11203	69999	68.5	69999	71.0	70.3	70.3	69999	72.3	70.8	71.0
11503	69999	68.5	69999	71.0	70.0	70.0	69999	72.3	70.8	71.0
11803	69999	68.5	69999	71.0	69.7	69.7	69999	72.3	70.8	71.0
12103	69999	68.5	69999	71.0	69.4	69.4	69999	72.3	70.8	71.0
12403	69999	68.5	69999	71.0	69.1	69.1	69999	72.3	70.8	71.0
12703	69999	68.5	69999	71.0	68.8	68.8	69999	72.3	70.8	71.0
13003	69999	68.5	69999	71.0	68.5	68.5	69999	72.3	70.8	71.0
13303	69999	68.5	69999	71.0	68.2	68.2	69999	72.3	70.8	71.0
13603	69999	68.5	69999	71.0	67.9	67.9	69999	72.3	70.8	71.0
13903	69999	68.5	69999	71.0	67.6	67.6	69999	72.3	70.8	71.0
14203	69999	68.5	69999	71.0	67.3	67.3	69999	72.3	70.8	71.0
14503	69999	68.5	69999	71.0	67.0	67.0	69999	72.3	70.8	71.0
14803	69999	68.5	69999	71.0	66.7	66.7	69999	72.3	70.8	71.0
15103	69999	68.5	69999	71.0	66.4	66.4	69999	72.3	70.8	71.0
15403	69999	68.5	69999	71.0	66.1	66.1	69999	72.3	70.8	71.0
15703	69999	68.5	69999	71.0	65.8	65.8	69999	72.3	70.8	71.0
16003	69999	68.5	69999	71.0	65.5	65.5	69999	72.3	70.8	71.0
16303	69999	68.5	69999	71.0	65.2	65.2	69999	72.3	70.8	71.0
16603	69999	68.5	69999	71.0	64.9	64.9	69999	72.3	70.8	71.0
16903	69999	68.5	69999	71.0	64.6	64.6	69999	72.3	70.8	71.0
17203	69999	68.5	69999	71.0	64.3	64.3	69999	72.3	70.8	71.0
17503	69999	68.5	69999	71.0	64.0	64.0	69999	72.3	70.8	71.0
17803	69999	68.5	69999	71.0	63.7	63.7	69999	72.3	70.8	71.0
18103	69999	68.5	69999	71.0	63.4	63.4	69999	72.3	70.8	71.0
18403	69999	68.5	69999	71.0	63.1	63.1	69999	72.3	70.8	71.0
18703	69999	68.5	69999	71.0	62.8	62.8	69999	72.3	70.8	71.0
19003	69999	68.5	69999	71.0	62.5	62.5	69999	72.3	70.8	71.0
19303	69999	68.5	69999	71.0	62.2	62.2	69999	72.3	70.8	71.0
19603	69999	68.5	69999	71.0	61.9	61.9	69999	72.3	70.8	71.0
19903	69999	68.5	69999	71.0	61.6	61.6	69999	72.3	70.8	71.0
20203	69999	68.5	69999	71.0	61.3	61.3	69999	72.3	70.8	71.0
20503	69999	68.5	69999	71.0	61.0	61.0	69999	72.3	70.8	71.0
20803	69999	68.5	69999	71.0	60.7	60.7	69999	72.3	70.8	71.0
21103	69999	68.5	69999	71.0	60.4	60.4	69999	72.3	70.8	71.0
21403	69999	68.5	69999	71.0	60.1	60.1	69999	72.3	70.8	71.0
21703	69999	68.5	69999	71.0	59.8	59.8	69999	72.3	70.8	71.0
22003	69999	68.5	69999	71.0	59.5	59.5	69999	72.3	70.8	71.0
22303	69999	68.5	69999	71.0	59.2	59.2	69999	72.3	70.8	71.0
22603	69999	68.5	69999	71.0	58.9	58.9	69999	72.3	70.8	71.0
22903	69999	68.5	69999	71.0	58.6	58.6	69999	72.3	70.8	71.0
23203	69999	68.5	69999	71.0	58.3	58.3	69999	72.3	70.8	71.0
23503	69999	68.5	69999	71.0	58.0	58.0	69999	72.3	70.8	71.0
23803	69999	68.5	69999	71.0	57.7	57.7	69999	72.3	70.8	71.0
24103	69999	68.5	69999	71.0	57.4	57.4	69999	72.3	70.8	71.0
24403	69999	68.5	69999	71.0	57.1	57.1	69999	72.3	70.8	71.0
24703	69999	68.5	69999	71.0	56.8	56.8	69999	72.3	70.8	71.0
25003	69999	68.5	69999	71.0	56.5	56.5	69999	72.3	70.8	71.0
25303	69999	68.5	69999	71.0	56.2	56.2	69999	72.3	70.8	71.0
25603	69999	68.								

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TABLE 133. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JUNE 13, 1979

COOLING CANAL				---DOWNSTREAM SENSORS---				---UPSTREAM SENSORS---			
TIME	UPSTREAM INTAKE	COLD DISCHARGE	END	A	B	C	D	A	B	C	D
100	71.2	83.7	83.7	72.5	73.1	73.1	89.99	71.6	71.0	72.1	73.2
400	71.3	83.7	83.7	72.6	73.4	73.4	89.99	71.2	71.2	72.1	73.2
500	71.3	83.7	83.7	72.6	73.4	73.4	89.99	71.2	71.2	72.1	73.2
600	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
700	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
800	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
900	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
1000	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
1100	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
1200	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
1300	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
1400	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
1500	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
1600	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
1700	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
1800	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
1900	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
2000	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
2100	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
2200	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
2300	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2
2400	71.3	83.7	83.7	72.5	73.4	73.4	89.99	71.2	71.2	72.1	73.2

TABLE 135. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JUNE 15, 1979

COOLING CANAL				---DOWNSTREAM SENSORS---				---UPSTREAM SENSORS---			
TIME	UPSTREAM INTAKE	COLD DISCHARGE	END	A	B	C	D	A	B	C	D
100	74.1	89.99	89.99	72.5	73.0	73.1	89.99	75.1	75.0	75.5	89.99
200	74.2	89.99	89.99	72.5	73.0	73.2	89.99	75.1	75.0	75.5	89.99
300	74.4	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
400	74.6	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
500	74.6	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
600	74.5	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
700	74.5	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
800	74.4	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
900	74.4	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
1000	74.9	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
1100	75.1	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
1200	75.5	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
1300	75.4	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
1400	75.5	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
1500	76.0	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
1600	76.0	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
1700	76.1	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
1800	76.1	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
1900	76.4	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
2000	76.4	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
2100	76.4	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
2200	76.1	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
2300	76.1	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99
2400	75.7	89.99	89.99	72.5	73.5	73.5	89.99	75.1	75.0	75.5	89.99

\*8999 OR 9999 -- INSTRUMENT MALFUNCTION



TABLE 162. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JUNE 22, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL			COLD DISCHARGE	DOWNSTREAM SENSORS										
			END	A	B		A	B	C								
100	73.4	72.3	91.1	90.9	74.0	73.2	74.6	99.9	100	73.8	73.5	92.6	92.9	92.9	74.0	76.0	99.9
200	73.3	72.1	91.0	90.9	74.0	73.2	74.6	99.9	200	74.0	73.5	92.6	92.9	92.9	74.0	76.0	99.9
300	73.3	72.2	91.0	90.9	74.0	73.2	74.6	99.9	300	74.0	73.5	92.6	92.9	92.9	74.0	76.0	99.9
400	73.3	72.2	91.0	90.9	74.0	73.2	74.6	99.9	400	74.0	73.5	92.6	92.9	92.9	74.0	76.0	99.9
500	73.2	72.1	90.5	90.9	74.0	73.2	74.6	99.9	500	74.0	73.7	91.0	90.9	90.9	74.0	76.0	99.9
600	73.0	72.2	89.8	90.9	74.0	73.2	74.6	99.9	600	74.0	73.7	91.0	90.9	90.9	74.0	76.0	99.9
700	73.1	72.1	89.5	90.9	74.0	73.2	74.6	99.9	700	74.0	73.7	91.0	90.9	90.9	74.0	76.0	99.9
800	72.9	72.1	89.2	90.9	74.0	73.2	74.6	99.9	800	74.0	73.8	91.1	90.9	90.9	74.0	76.0	99.9
900	73.0	72.5	89.6	90.9	74.0	73.3	74.6	99.9	900	74.0	74.2	91.0	90.9	90.9	74.0	76.0	99.9
1000	73.3	72.7	89.9	90.9	74.0	73.3	74.6	99.9	1000	74.3	74.3	89.8	90.9	90.9	74.4	75.3	99.9
1100	73.3	73.0	89.9	90.9	74.0	73.0	74.6	99.9	1100	74.6	74.6	90.0	90.9	90.9	74.5	75.2	99.9
1200	73.3	73.5	90.4	90.9	74.0	73.3	74.6	99.9	1200	74.5	74.8	90.4	90.9	90.9	74.5	75.1	99.9
1300	73.5	73.5	90.4	90.9	74.0	73.3	74.6	99.9	1300	74.5	75.3	90.5	90.9	90.9	74.5	75.2	99.9
1400	73.5	73.5	90.4	90.9	74.0	73.3	74.6	99.9	1400	74.5	75.3	90.5	90.9	90.9	74.5	75.1	99.9
1500	73.5	73.5	90.4	90.9	74.0	73.3	74.6	99.9	1500	74.5	75.3	90.5	90.9	90.9	74.5	75.1	99.9
1600	73.9	74.5	91.4	90.9	74.0	73.5	74.6	99.9	1600	75.0	75.5	91.6	90.9	90.9	74.5	75.0	99.9
1700	74.3	75.0	92.4	90.9	74.0	73.6	74.6	99.9	1700	75.0	75.3	91.6	90.9	90.9	74.5	75.0	99.9
1800	74.0	74.5	92.5	90.9	74.0	73.7	74.6	99.9	1800	75.0	75.3	91.6	90.9	90.9	74.5	75.0	99.9
1900	73.8	74.5	92.9	90.9	74.0	73.8	74.6	99.9	1900	75.0	75.3	91.6	90.9	90.9	74.5	75.0	99.9
2000	73.7	74.5	93.3	90.9	74.0	73.7	74.6	99.9	2000	74.8	75.5	91.4	90.9	90.9	74.6	74.6	99.9
2100	74.0	75.1	92.6	90.9	75.0	73.7	74.6	99.9	2100	74.8	75.5	91.4	90.9	90.9	74.3	74.5	99.9
2200	73.9	74.3	92.4	90.9	75.0	73.5	74.6	99.9	2200	74.5	75.1	91.2	90.9	90.9	74.2	74.5	99.9
2300	73.9	73.9	92.4	90.9	75.2	73.8	74.6	99.9	2300	74.5	74.9	91.2	90.9	90.9	74.2	74.6	99.9
2400	73.9	73.5	92.3	90.9	75.2	73.8	74.6	99.9	2400	74.3	74.6	91.3	90.9	90.9	74.0	75.3	99.9
2500	73.9	73.5	92.3	90.9	75.2	73.8	74.6	99.9	2500	74.3	74.6	91.3	90.9	90.9	74.0	75.2	99.9

TABLE 161. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JUNE 21, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL			COLD DISCHARGE	DOWNSTREAM SENSORS										
			END	A	B		A	B	C								
100	74.4	74.1	84.0	83.9	90.9	74.2	75.5	99.9	100	70.5	71.5	82.2	82.9	82.9	71.4	74.8	99.9
200	74.3	74.0	84.1	83.9	90.9	74.1	75.6	99.9	200	70.5	71.5	82.2	82.9	82.9	71.4	74.8	99.9
300	74.5	73.8	83.6	83.9	90.9	74.3	75.6	99.9	300	70.5	71.6	82.5	82.9	82.9	71.6	74.6	99.9
400	74.5	73.7	83.6	83.9	90.9	74.3	75.6	99.9	400	70.9	71.3	82.2	82.9	82.9	71.5	74.8	99.9
500	74.4	73.5	83.1	83.9	90.9	74.5	75.0	99.9	500	70.5	71.1	81.8	82.9	82.9	71.3	74.9	99.9
600	74.4	73.7	82.5	83.9	90.9	74.6	75.6	99.9	600	70.6	71.0	81.3	82.9	82.9	71.2	74.3	99.9
700	74.4	73.6	82.6	83.9	90.9	74.4	75.0	99.9	700	70.3	70.3	80.3	82.9	82.9	71.0	74.3	99.9
800	74.2	73.5	82.7	83.9	90.9	74.1	74.6	99.9	800	70.5	70.7	80.0	82.9	82.9	70.7	74.0	99.9
900	74.0	73.5	82.6	83.9	90.9	74.0	74.6	99.9	900	70.5	70.7	80.0	82.9	82.9	70.6	73.7	99.9
1000	74.1	74.3	82.9	83.9	90.9	73.7	75.5	99.9	1000	70.5	70.9	80.6	82.9	82.9	70.6	73.8	99.9
1100	74.3	74.3	83.3	83.9	90.9	73.7	75.5	99.9	1100	70.5	70.9	80.6	82.9	82.9	70.6	73.8	99.9
1200	73.6	74.1	84.0	83.9	90.9	73.5	75.3	99.9	1200	70.5	71.3	81.2	82.9	82.9	70.5	73.2	99.9
1300	73.6	74.3	84.3	83.9	90.9	73.5	75.3	99.9	1300	70.5	71.5	82.0	82.9	82.9	70.7	73.2	99.9
1400	73.1	74.0	84.0	83.9	90.9	73.4	74.5	99.9	1400	70.5	71.6	82.6	82.9	82.9	70.8	73.2	99.9
1500	73.0	73.8	83.8	83.9	90.9	73.4	74.4	99.9	1500	70.6	71.3	83.6	82.9	82.9	71.0	73.2	99.9
1600	72.5	73.5	81.0	83.9	90.9	73.0	75.0	99.9	1600	71.0	72.0	84.0	82.9	82.9	71.0	72.7	99.9
1700	72.5	73.3	81.0	83.9	90.9	72.5	74.6	99.9	1700	71.1	72.1	84.8	82.9	82.9	71.0	72.9	99.9
1800	72.1	72.8	80.3	83.9	90.9	72.3	74.8	99.9	1800	71.5	72.5	85.5	82.9	82.9	71.5	73.0	99.9
1900	71.6	72.3	81.3	83.9	90.9	72.0	74.7	99.9	1900	71.6	72.4	86.1	82.9	82.9	71.5	73.4	99.9
2000	71.7	71.7	81.6	83.9	90.9	71.9	74.9	99.9	2000	71.5	72.4	86.1	82.9	82.9	71.5	73.4	99.9
2100	71.7	71.5	81.6	83.9	90.9	71.5	74.5	99.9	2100	71.6	72.0	85.9	82.9	82.9	71.3	73.6	99.9
2200	70.6	71.7	83.2	83.9	90.9	71.5	74.9	99.9	2200	71.6	72.0	86.8	82.9	82.9	71.5	73.6	99.9
2300	70.6	71.7	83.0	83.9	90.9	71.5	74.8	99.9	2300	71.6	71.8	86.7	82.9	82.9	71.5	73.6	99.9
2400	70.9	71.5	83.2	83.9	90.9	71.5	75.1	99.9	2400	71.6	71.8	86.5	82.9	82.9	71.7	74.3	99.9

TABLE 164. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JUNE 26, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL			COLD DISCHARGE	DOWNSTREAM SENSORS										
			END	A	B		A	B	C								
100	74.4	74.1	84.0	83.9	90.9	74.2	75.5	99.9	100	70.5	71.5	82.2	82.9	82.9	71.4	74.8	99.9
200	74.3	74.0	84.1	83.9	90.9	74.1	75.6	99.9	200	70.5	71.5	82.2	82.9	82.9	71.4	74.8	99.9
300	74.5	73.8	83.6	83.9	90.9	74.3	75.6	99.9	300	70.5	71.6	82.5	82.9	82.9	71.6	74.6	99.9
400	74.5	73.7	83.6	83.9	90.9	74.3	75.6	99.9	400	70.9	71.3	82.2	82.9	82.9	71.5	74.8	99.9
500	74.4	73.5	83.1	83.9	90.9	74.5	75.0	99.9	500	70.5	71.1	81.8	82.9	82.9	71.3	74.9	99.9
600	74.4	73.7	82.5	83.9	90.9	74.6	75.6	99.9	600	70.6	71.0	81.3	82.9	82.9	71.2	74.3	99.9
700	74.4	73.6	82.6	83.9	90.9	74.4	75.0	99.9	700	70.3	70.3	80.3	82.9	82.9	71.0	74.3	99.9
800	74.2	73.5	82.7	83.9	90.9	74.1	74.6	99.9	800	70.5	70.7	80.0	82.9	82.9	70.7	74.0	99.9
900	74.0	73.5	82.6	83.9	90.9	74.0	74.6	99.9	900	70.5	70.7	80.0	82.9	82.9	70.6	73.7	99.9
1000	74.1	74.3	82.9	83.9	90.9	73.7	75.5	99.9	1000	70.5	70.9	80.6	82.9	82.9	70.6	73.8	99.9
1100	74.3	74.3	83.3	83.9	90.9	73.7	75.5	99.9	1100	70.5	70.9	80.6	82.9	82.9	70.6	73.8	99.9
1200	73.6	74.1	84.0	83.9	90.9	73.5	75.3	99.9	1200	70.5	71.3	81.2	82.9	82.9	70.5	73.2	99.9
1300	73.6	74.3	84.3	83.9	90.9	73.5	75.3	99.9	1300	70.5	71.5	82.0	82.9	82.9	70.7	73.2	99.9
1400	73.1	74.0	84.0	83.9	90.9	73.4	74.5	99.9	1400	70.5	71.6	82.6	82.9	82.9	70.8	73.2	99.9
1500	73.0	73.8	83.8	83.9	90.9	73.4	74.4	99.9	1500	70.6	71.3	83.6	82.9	82.9	71.0	73.2	99.9
1600	72.5	73.5	81.0	83.9	90.9	73.0	75.0	99.9	1600	71.0	72.0	84.0	82.9	82.9	71.0	72.7	99.9
1700	72.5	73.3	81.0	83.9	90.9	72.5	74.6	99.9	1700	71.1	72.1	84.8	82.9	82.9	71.0	72.9	99.9
1800	72.1	72.8	80.3	83.9	90.9	72.3	74.8	99.9	1800	71.5	72.5	85.5	82.9	82.9	71.5	73.0	99.9
1900	71.6	72.3	81.3	83.9	90.9	72.0	74.7	99.9	1900	71.6	72.4	86.1	82.9	82.9	71.5	73.4	99.9
2000	71.7	71.7	81.6	83.9	90.9	71.9	74.9	99.9	2000	71.5	72.4	86.1	82.9	82.9	71.5	73.4	99.9
2100	71.7	71.5	81.6	83.9	90.9	71.5	74.5	99.9									

TABLE 145. DAILY WATER TEMPERATURE (F) DATA, 2400-CITIES STATION, JUNE 25, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE			DOWNSTREAM SENSORS		
		A	B	C	A	B	C
100	72.0	85.3	89.7	93.9	71.6	76.4	74.0
200	72.0	85.9	89.9	93.9	72.0	74.6	74.6
300	72.4	85.6	89.9	93.9	72.0	75.0	74.6
400	72.6	85.5	89.9	93.9	72.1	75.3	75.0
500	72.5	85.0	89.9	93.9	72.2	75.0	75.0
600	72.1	84.1	89.9	93.9	72.0	75.4	75.6
700	72.1	83.3	89.9	93.9	71.7	75.4	75.1
800	72.0	83.2	89.9	93.9	72.0	75.3	74.9
900	72.0	81.5	89.9	93.9	71.7	74.6	74.5
1000	71.9	84.5	89.9	93.9	71.5	74.4	74.2
1100	71.9	85.3	89.9	93.9	71.6	74.2	74.6
1200	71.9	85.5	89.9	93.9	71.6	74.1	74.0
1300	72.1	86.3	89.9	93.9	71.7	74.0	74.2
1400	72.2	85.5	89.9	93.9	71.6	74.1	74.1
1500	72.2	86.9	89.9	93.9	71.6	74.0	74.0
1600	72.3	87.5	89.9	93.9	71.8	74.3	74.0
1700	72.5	88.0	89.9	93.9	71.5	74.0	75.0
1800	72.5	88.3	89.9	93.9	71.5	73.7	74.8
1900	72.4	88.3	89.9	93.9	71.3	74.0	73.8
2000	72.1	88.6	89.9	93.9	71.0	74.0	73.7
2100	72.1	89.0	89.9	93.9	71.2	74.0	73.3
2200	72.0	89.5	89.9	93.9	71.2	74.1	73.3
2300	72.0	88.6	89.9	93.9	71.3	74.0	73.5
2400	72.4	88.5	89.9	93.9	71.8	74.0	73.6

TABLE 146. DAILY WATER TEMPERATURE (F) DATA, 0400-CITIES STATION, JUNE 26, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE			DOWNSTREAM SENSORS		
		A	B	C	A	B	C
100	72.5	89.0	93.9	93.9	71.7	81.0	81.0
200	72.7	88.4	93.9	93.9	71.7	81.7	81.7
300	73.1	85.0	93.9	93.9	72.1	85.0	85.0
400	73.1	85.3	93.9	93.9	72.3	85.3	85.3
500	73.0	88.0	93.9	93.9	72.2	88.0	88.0
600	73.0	87.0	93.9	93.9	72.2	87.0	87.0
700	72.9	87.0	93.9	93.9	72.3	87.0	87.0
800	72.6	85.5	93.9	93.9	72.3	85.5	85.5
900	72.3	87.0	93.9	93.9	72.3	87.0	87.0
1000	72.4	88.0	93.9	93.9	72.3	88.0	88.0
1100	72.5	88.5	93.9	93.9	72.5	88.5	88.5
1200	72.5	89.5	93.9	93.9	72.8	89.5	89.5
1300	72.4	89.3	93.9	93.9	72.8	89.3	89.3
1400	72.5	89.3	93.9	93.9	73.1	89.3	89.3
1500	72.9	89.3	93.9	93.9	73.6	89.3	89.3
1600	73.0	89.7	93.9	93.9	73.5	89.7	89.7
1700	73.1	90.2	93.9	93.9	72.2	90.2	90.2
1800	73.1	91.5	93.9	93.9	72.3	91.5	91.5
1900	73.4	93.5	93.9	93.9	72.3	93.5	93.5
2000	73.5	90.6	93.9	93.9	72.2	90.6	90.6
2100	73.3	90.8	93.9	93.9	72.3	90.8	90.8
2200	73.5	91.3	93.9	93.9	72.3	91.3	91.3
2300	73.9	91.0	93.9	93.9	73.1	91.0	91.0
2400	73.7	90.6	93.9	93.9	73.3	90.6	90.6

TABLE 147. DAILY WATER TEMPERATURE (F) DATA, 2400-CITIES STATION, JUNE 27, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE			DOWNSTREAM SENSORS		
		A	B	C	A	B	C
100	73.2	93.8	99.7	99.7	72.7	93.7	93.7
200	73.9	93.6	99.9	99.9	72.7	93.9	93.9
300	73.9	90.2	99.9	99.9	72.7	90.9	90.9
400	73.9	89.3	99.7	99.9	72.7	89.9	89.9
500	73.7	89.4	99.7	99.9	72.5	89.9	89.9
600	73.6	89.8	99.7	99.9	72.4	89.9	89.9
700	73.5	89.6	99.9	99.9	72.3	89.9	89.9
800	73.3	89.8	99.9	99.9	72.1	89.9	89.9
900	73.0	90.1	99.9	99.9	72.1	90.0	90.0
1000	72.9	90.5	99.7	99.9	72.0	90.5	90.5
1100	73.0	90.5	99.7	99.9	72.0	90.9	90.9
1200	73.0	90.8	99.9	99.9	71.8	90.9	90.9
1300	73.2	91.3	99.9	99.9	71.9	91.3	91.3
1400	73.1	91.4	99.9	99.9	72.0	91.4	91.4
1500	73.1	91.5	99.9	99.9	72.0	91.5	91.5
1600	73.2	91.3	99.9	99.9	72.0	91.3	91.3
1700	73.6	92.6	105.5	99.9	72.0	92.6	92.6
1800	73.6	92.6	106.7	99.9	72.2	92.6	92.6
1900	73.6	92.6	107.4	99.9	72.2	92.6	92.6
2000	73.7	92.5	106.5	99.9	72.2	92.5	92.5
2100	74.0	92.5	104.5	99.9	72.2	92.5	92.5
2200	74.0	92.5	104.0	99.9	72.2	92.5	92.5
2300	74.0	92.5	102.0	99.9	72.3	92.5	92.5
2400	74.0	92.5	101.9	99.9	72.3	92.5	92.5

TABLE 148. DAILY WATER TEMPERATURE (F) DATA, 0400-CITIES STATION, JUNE 28, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE			DOWNSTREAM SENSORS		
		A	B	C	A	B	C
100	73.0	91.5	104.0	99.9	73.0	91.5	104.0
200	72.9	92.0	102.5	99.9	73.0	92.0	102.5
300	73.0	91.6	103.0	99.9	73.0	91.6	103.0
400	73.0	91.5	104.0	99.9	73.0	91.5	104.0
500	73.2	91.6	103.1	99.9	73.0	91.6	103.1
600	73.0	91.4	102.5	99.9	73.0	91.4	102.5
700	73.0	91.3	101.1	99.9	73.0	91.3	101.1
800	73.0	91.5	100.5	99.9	73.0	91.5	100.5
900	73.2	91.0	100.6	99.9	73.0	91.0	100.6
1000	73.5	91.5	101.4	99.9	73.0	91.5	101.4
1100	73.5	92.0	101.9	99.9	72.9	92.0	101.9
1200	73.7	92.0	103.2	99.9	72.9	92.0	103.2
1300	74.2	92.3	105.7	99.9	73.1	92.3	105.7
1400	74.5	92.0	105.2	99.9	73.3	92.0	105.2
1500	74.0	92.5	109.5	99.9	73.5	92.5	109.5
1600	74.1	92.3	105.0	99.9	73.7	92.3	105.0
1700	74.3	92.8	106.0	99.9	73.6	92.8	106.0
1800	74.5	93.0	104.7	99.9	73.6	93.0	104.7
1900	74.5	93.4	100.5	99.9	73.9	93.4	100.5
2000	74.5	93.0	101.6	99.9	74.0	93.0	101.6
2100	74.5	92.3	101.7	99.9	73.7	92.3	101.7
2200	74.8	92.5	102.4	99.9	73.6	92.5	102.4
2300	74.8	92.1	101.1	99.9	74.8	92.1	101.1
2400	74.5	91.5	100.4	99.9	74.0	91.5	100.4

TABLE 149. DAILY WATER TEMPERATURE (F) DATA, 2400-CITIES STATION, JUNE 29, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE			DOWNSTREAM SENSORS		
		A	B	C	A	B	C
100	73.2	93.8	99.7	99.7	72.7	93.7	93.7
200	73.9	93.6	99.9	99.9	72.7	93.9	93.9
300	73.9	90.2	99.9	99.9	72.7	90.9	90.9
400	73.9	89.3	99.7	99.9	72.7	89.9	89.9
500	73.7	89.4	99.7	99.9	72.5	89.9	89.9
600	73.6	89.8	99.7	99.9	72.4	89.9	89.9
700	73.5	89.6	99.9	99.9	72.3	89.9	89.9
800	73.3	89.8	99.9	99.9	72.1	89.9	89.9
900	73.0	90.1	99.9	99.9	72.1	90.0	90.0
1000	72.9	90.5	99.7	99.9	72.0	90.5	90.5
1100	73.0	90.5	99.7	99.9	72.0	90.9	90.9
1200	73.0	90.8	99.9	99.9	71.8	90.9	90.9
1300	73.2	91.3	99.9	99.9	71.9	91.3	91.3
1400	73.1	91.4	99.9	99.9	72.0	91.4	91.4
1500	73.1	91.5	99.9	99.9	72.0	91.5	91.5
1600	73.2	91.3	99.9	99.9	72.0	91.3	91.3
1700	73.6	92.6	105.5	99.9	72.0	92.6	92.6
1800	73.6	92.6	106.7	99.9	72.2	92.6	92.6
1900	73.6	92.6	107.4	99.9	72.2	92.6	92.6
2000	73.7	92.5	106.5	99.9	72.2	92.5	92.5
2100	74.0	92.5	104.5	99.9	72.2	92.5	92.5
2200	74.0	92.5	104.0	99.9	72.2	92.5	92.5
2300	74.0	92.5	102.0	99.9	72.3	92.5	92.5
2400	74.0	92.5	101.9	99.9	72.3	92.5	92.5

TABLE 150. DAILY WATER TEMPERATURE (F) DATA, 0400-CITIES STATION, JUNE 30, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL COLD DISCHARGE			DOWNSTREAM SENSORS		
		A	B	C	A	B	C
100	73.0	91.5	104.0	99.9	73.0	91.5	104.0
200	72.9	92.0	102.5	99.9	73.0	92.0	102.5
300	73.0	91.6	103.0	99.9	73.0	91.6	103.0
400	73.0	91.5	104.0	99.9	73.0	91.5	104.0
500	73.2	91.6	103.1	99.9	73.0	91.6	103.1
600	73.0	91.4	102.5	99.9	73.0	91.4	102.5
700	73.0	91.3	101.1	99.9	73.0	91.3	101.1
800	73.0	91.5	100.5	99.9	73.0	91.5	100.5
900	73.2	91.0	100.6	99.9	73.0	91.0	100.6
1000	73.5	91.5	101.4	99.9	73.0	91.5	101.4
1100	73.5	92.0	101.9	99.9	72.9	92.0	101.9
1200	73.7	92.0	103.2	99.9	72.9	92.0	103.2
1300	74.2	92.3	105.7	99.9	73.1	92.3	105.7
1400	74.5	92.0	105.2	99.9	73.3	92.0	105.2
1500	74.0	92.5	109.5	99.9	73.5	92.5	109.5
1600	74.1	92.3	105.0	99.9	73.7	92.3	105.0
1700	74.3	92.8	106.0	99.9	73.6	92.8	106.0
1800	74.5	93.0	104.7	99.9	73.6	93.0	104.7
1900	74.5	93.4	100.5	99.9	73.9	93.4	100.5
2000	74.5	93.0	101.6	99.9	74.0	93.0	101.6
2100	74.5	92.3	101.7	99.9	73.7	92.3	101.7
2200	74.8						

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TABLE 149. DAILY WATER TEMPERATURE (F) DATA,  
24H-CITIES STATION, JUNE 29, 1979

TIME	COOLING				-----DOWNSTREAM SENSORS-----				-----DOWNSTREAM SENSORS-----						
	UPSTREAM	INTAKE	CANAL		A	3	C	D	A	3	C	D			
			COLD	DISCHARGE									COLD	DISCHARGE	
133	74.2	74.5	93.6	130.4	9399	74.3	9399	73.1	100	72.8	73.4	9399	72.7	9399	72.8
207	74.5	74.5	91.3	130.2	9399	74.5	9399	73.0	200	73.0	73.1	9399	72.7	9399	72.8
303	74.9	74.9	91.3	131.6	9399	74.5	9399	73.3	300	72.9	73.0	9399	72.9	9399	72.8
403	74.9	74.9	91.0	132.0	9399	74.4	9399	73.3	500	72.7	73.0	9399	72.6	9399	72.5
500	75.0	75.0	93.7	102.6	9399	74.4	9399	73.3	500	72.5	72.9	9399	72.6	9399	72.6
603	75.0	75.0	90.0	102.6	9399	74.1	9399	73.2	600	72.6	73.0	9399	72.6	9399	72.6
700	74.7	74.9	90.0	101.9	9399	74.3	9399	72.8	700	72.0	72.5	9399	72.7	9399	72.3
803	74.6	74.9	93.1	132.2	9399	74.0	9399	72.5	800	72.8	72.8	9399	72.5	9399	72.4
900	74.3	74.8	93.1	131.2	9399	74.0	9399	9999	900	72.6	73.2	9399	72.5	9399	72.7
1000	74.1	74.7	89.6	131.0	9399	73.7	9399	72.4	1000	72.6	73.2	9399	72.5	9399	72.5
1103	74.5	74.5	89.3	131.6	9399	73.5	9399	73.1	1100	73.3	73.5	9399	72.4	9399	72.8
1200	74.4	74.4	89.3	131.6	9399	73.5	9399	73.1	1200	73.3	73.5	9399	72.4	9399	72.8
1303	73.7	74.1	85.5	99.8	9399	74.6	9399	9999	1300	72.7	73.6	9399	72.5	9399	72.5
1400	73.5	74.1	85.5	99.9	9399	74.2	9399	72.8	1400	73.0	74.0	9399	72.8	9399	73.1
1500	73.5	74.1	89.2	99.4	9399	73.5	9399	73.5	1500	73.0	74.3	9399	72.6	9399	72.6
1603	73.5	74.5	89.2	100.1	9399	73.2	9399	72.7	1600	73.1	74.2	9399	72.8	9399	72.8
1700	73.7	74.5	89.4	99.6	9399	73.4	9399	72.3	1700	73.3	74.5	9399	73.0	9399	72.6
1803	73.6	74.5	89.3	99.4	9399	73.1	9399	9999	1800	73.6	74.7	9399	73.0	9399	72.6
1900	74.0	74.5	89.5	99.0	9399	73.3	9399	73.6	1900	73.5	74.7	9399	73.1	9399	9399
2003	73.7	74.2	88.5	98.2	9399	73.2	9399	73.0	2000	73.5	74.5	9399	73.0	9399	72.7
2100	73.7	74.2	88.6	98.2	9399	73.0	9399	73.0	2100	73.5	74.4	9399	73.0	9399	72.7
2203	73.5	74.0	88.9	99.99	9399	73.0	9399	73.0	2200	73.5	74.6	9399	73.3	9399	73.1
2300	73.4	73.9	88.5	98.1	9399	72.9	9399	9999	2300	73.5	74.3	9399	73.1	9399	73.1
2400	72.9	73.3	88.5	98.0	9399	72.9	9399	72.5	2400	73.5	74.2	9399	73.4	9399	72.9
2600	72.9	73.5	88.5	97.5	9399	72.9	9399	72.5	2600	73.6	73.1	9399	73.4	9399	72.2
						72.9		72.5	2600	73.9	73.9	9399	73.5	9399	73.9
						72.9		72.5	2600	73.9	73.9	9399	73.5	9399	73.9

\*9399 OR 9999 -- INSTRUMENT MALFUNCTION

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TABLE 151. DAILY WATER TEMPERATURE (F) DATA.  
QUAD-CITIES STATION. JULY 1, 1979

TIME	UPSTREAM	INTAKE	COOLING		---DOWNSTREAM SENSORS---			
			WATER TEMP END	DISCHARGE	A	B	C	D
100	74.0	73.9	89.7	100.0	9999	73.6	9999	73.6
200	74.1	74.0	89.6	104.4	9999	73.6	9999	73.8
300	74.5	74.1	89.5	98.5	9999	74.0	9999	74.3
400	74.6	74.5	89.3	97.6	9999	74.0	9999	74.7
500	74.5	74.5	89.0	97.6	9999	74.0	9999	74.5
600	74.6	74.4	88.3	97.5	9999	74.3	9999	73.9
700	74.6	74.2	87.5	96.7	9999	74.4	9999	74.6
800	74.5	74.0	87.2	96.2	9999	74.4	9999	74.3
900	74.5	74.2	87.4	97.4	9999	74.2	9999	74.9
1000	74.6	74.3	87.7	97.5	9999	74.3	9999	74.6
1100	74.7	74.6	88.4	99.0	9999	74.2	9999	74.1
1200	74.9	74.7	88.7	99.9	9999	74.3	9999	74.2
1300	75.1	75.3	88.6	101.0	9999	74.4	9999	74.2
1400	75.2	75.5	88.7	102.3	9999	74.6	9999	74.2
1500	75.3	75.7	89.0	103.7	9999	74.8	9999	74.0
1600	75.5	75.8	89.4	105.0	9999	74.8	9999	74.1
1700	75.5	75.9	89.6	105.2	9999	74.8	9999	74.0
1800	75.7	75.8	90.0	104.5	9999	74.7	9999	74.0
1900	75.6	75.7	90.0	104.6	9999	74.7	9999	74.5
2000	75.5	75.4	90.1	105.0	9999	74.6	9999	74.5
2100	75.3	75.2	90.3	104.9	9999	74.5	9999	74.0
2200	75.4	75.1	90.4	104.6	9999	74.6	9999	74.4
2300	75.5	74.8	90.5	104.5	9999	74.6	9999	74.5
2400	75.5	74.8	90.0	104.0	9999	74.9	9999	74.6

TABLE 152. DAILY WATER TEMPERATURE (F) DATA.  
QUAD-CITIES STATION. JULY 2, 1979

TIME	UPSTREAM	INTAKE	COOLING		---DOWNSTREAM SENSORS---			
			WATER TEMP END	DISCHARGE	A	B	C	D
100	75.5	74.8	90.0	105.4	9999	75.0	9999	74.7
200	75.4	74.8	90.0	105.2	9999	75.2	9999	74.7
300	75.4	74.3	90.0	105.7	9999	75.2	9999	75.0
400	76.0	74.8	89.4	105.1	9999	75.5	9999	75.4
500	76.0	74.8	88.8	104.4	9999	75.5	9999	76.4
600	76.5	75.0	88.3	103.9	9999	75.5	9999	75.9
700	76.4	75.2	88.0	103.8	9999	75.5	9999	75.7
800	76.3	75.3	87.9	104.0	9999	75.5	9999	75.1
900	76.4	75.5	88.0	105.3	9999	75.5	9999	76.5
1000	76.4	75.6	88.1	103.9	9999	75.5	9999	76.3
1100	76.5	75.3	88.4	105.2	9999	75.7	9999	76.5
1200	76.6	75.4	89.0	105.6	9999	75.7	9999	76.8
1300	76.9	76.5	89.4	106.6	9999	76.0	9999	76.8
1400	77.0	77.0	89.9	108.2	9999	76.0	9999	76.9
1500	77.2	77.2	90.0	109.0	9999	76.3	9999	76.9
1600	77.4	77.6	91.1	110.4	9999	76.4	9999	76.6
1700	77.4	77.7	91.5	112.0	9999	76.4	9999	76.5
1800	77.2	77.8	92.0	111.3	9999	76.3	9999	76.5
1900	77.0	77.5	92.5	111.6	9999	76.3	9999	76.6
2000	77.0	77.4	92.5	111.2	9999	76.0	9999	76.6
2100	76.6	77.0	92.6	110.6	9999	75.8	9999	76.5
2200	76.5	76.6	92.8	111.0	9999	75.9	9999	76.5
2300	76.5	76.5	92.5	110.5	9999	75.8	9999	76.4
2400	76.3	76.2	92.4	109.8	9999	75.6	9999	76.4

TABLE 153. DAILY WATER TEMPERATURE (F) DATA.  
QUAD-CITIES STATION. JULY 3, 1979

TIME	UPSTREAM	INTAKE	COOLING		---DOWNSTREAM SENSORS---			
			WATER TEMP END	DISCHARGE	A	B	C	D
100	76.2	76.0	91.8	109.4	9999	76.0	9999	76.6
200	76.4	76.0	91.3	109.0	9999	75.7	9999	77.0
300	76.5	75.7	91.3	108.3	9999	76.0	9999	77.3
400	76.6	75.8	91.1	107.9	9999	76.4	9999	77.3
500	76.6	75.9	90.7	107.5	9999	76.3	9999	77.3
600	76.8	76.0	90.0	107.2	9999	76.5	9999	77.6
700	77.0	76.0	90.0	107.0	9999	76.5	9999	78.0
800	77.0	76.0	89.7	106.9	9999	76.4	9999	78.0
900	76.8	76.4	89.5	106.7	9999	76.5	9999	77.5
1000	76.6	76.3	89.6	107.0	9999	76.0	9999	77.4
1100	76.1	76.6	88.8	106.8	9999	75.9	9999	77.4
1200	9999	77.0	89.0	107.4	9999	76.5	9999	77.4
1300	9999	76.0	89.7	108.0	9999	76.7	9999	77.4
1400	9999	76.0	90.2	107.5	9999	76.0	9999	77.4
1500	9999	76.5	91.1	109.8	9999	75.0	9999	77.4
1600	9999	76.5	91.5	110.5	9999	75.0	9999	77.4
1700	9999	76.6	92.2	110.6	9999	74.8	9999	77.4
1800	9999	76.5	93.3	111.5	9999	74.6	9999	77.4
1900	9999	76.3	93.5	111.2	9999	74.8	9999	77.4
2000	9999	76.0	93.7	111.1	9999	74.5	9999	77.4
2100	9999	76.0	94.2	111.3	9999	74.5	9999	77.4
2200	9999	76.3	93.0	111.0	9999	74.5	9999	77.4
2300	9999	76.2	93.0	110.7	9999	74.9	9999	77.4
2400	9999	76.0	93.0	109.6	9999	74.9	9999	77.4

9999 OR 9999 -- INSTRUMENT MALFUNCTION

TABLE 154. DAILY WATER TEMPERATURE (F) DATA.  
QUAD-CITIES STATION. JULY 4, 1979

TIME	UPSTREAM	INTAKE	COOLING		---DOWNSTREAM SENSORS---			
			WATER TEMP END	DISCHARGE	A	B	C	D
100	9999	75.5	92.6	109.4	9999	75.0	9999	9999
200	9999	75.5	92.2	108.9	9999	74.9	9999	9999
300	9999	75.3	92.5	107.8	9999	74.9	9999	9999
400	9999	75.2	92.5	107.0	9999	74.9	9999	9999
500	9999	75.0	92.5	106.9	9999	74.6	9999	9999
600	9999	75.0	92.3	106.1	9999	74.9	9999	9999
700	9999	75.0	91.5	105.1	9999	75.1	9999	9999
800	9999	75.0	90.5	104.7	9999	75.1	9999	9999
900	9999	75.0	89.2	103.5	9999	74.9	9999	9999
1000	9999	74.9	88.5	102.0	9999	74.9	9999	9999
1100	9999	75.2	88.2	101.5	9999	74.9	9999	9999
1200	9999	75.6	87.7	101.3	9999	75.1	9999	9999
1300	9999	75.8	87.9	101.2	9999	75.0	9999	9999
1400	9999	76.2	87.5	101.4	9999	74.9	9999	9999
1500	9999	76.6	87.4	101.7	9999	75.2	9999	9999
1600	9999	76.7	87.0	101.7	9999	75.3	9999	9999
1700	9999	76.8	86.6	101.8	9999	75.1	9999	9999
1800	9999	76.7	86.7	101.7	9999	75.1	9999	9999
1900	9999	76.5	86.6	101.8	9999	74.9	9999	9999
2000	9999	76.3	87.0	101.8	9999	74.7	9999	9999
2100	9999	76.3	87.5	101.9	9999	74.8	9999	9999
2200	9999	76.0	87.3	102.0	9999	74.4	9999	9999
2300	9999	75.5	87.1	102.1	9999	74.4	9999	9999
2400	9999	75.2	87.0	101.9	9999	74.4	9999	9999

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TABLE 155. DAILY WATER TEMPERATURE (F) DATA.  
QUAD-CITIES STATION, JULY 5, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		---DOWNSTREAM SENSORS---			
			COLD END	DISCHARGE	A	B	C	D
100	*9999	75.0	86.5	101.9	*9999	74.1	*9999	*9999
200	*9999	74.9	86.5	102.0	*9999	74.1	*9999	*9999
300	*9999	74.5	86.3	101.4	*9999	74.3	*9999	*9999
400	*9999	74.5	86.0	101.1	*9999	74.3	*9999	*9999
500	*9999	74.3	85.6	101.2	*9999	74.4	*9999	*9999
600	*9999	74.1	85.1	102.4	*9999	74.4	*9999	*9999
700	*9999	74.1	85.2	102.9	*9999	74.4	*9999	*9999
800	*9999	74.1	85.5	103.1	*9999	74.5	*9999	*9999
900	*9999	74.4	85.5	103.9	*9999	74.4	*9999	*9999
1000	*9999	74.5	85.3	104.4	*9999	74.3	*9999	*9999
1100	*9999	75.0	85.3	104.0	*9999	74.4	*9999	*9999
1200	74.6	75.0	85.7	104.1	*9999	74.3	*9999	*9999
1300	74.7	74.5	86.3	104.0	*9999	74.5	*9999	*9999
1400	*9999	*9999	*9999	*9999	*9999	*9999	*9999	*9999
1500	75.6	74.5	87.0	104.5	*9999	74.6	*9999	*9999
1600	75.5	74.5	87.6	104.2	*9999	74.6	*9999	*9999
1700	75.6	74.1	88.0	104.5	*9999	74.7	*9999	*9999
1800	75.6	74.2	88.3	104.6	*9999	74.9	*9999	*9999
1900	75.9	74.0	88.8	105.0	*9999	74.7	*9999	*9999
2000	75.7	73.8	89.2	104.9	*9999	74.7	*9999	*9999
2100	75.9	73.7	89.6	104.9	*9999	74.7	*9999	*9999
2200	75.7	73.5	89.3	104.8	*9999	74.7	*9999	*9999
2300	75.6	73.4	89.5	104.4	*9999	74.6	*9999	*9999
2400	75.8	73.2	89.2	103.9	*9999	74.7	*9999	*9999

TABLE 156. DAILY WATER TEMPERATURE (F) DATA.  
QUAD-CITIES STATION, JULY 6, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		---DOWNSTREAM SENSORS---			
			COLD END	DISCHARGE	A	B	C	D
100	75.9	73.0	88.8	103.3	*9999	74.7	*9999	*9999
200	76.0	73.0	88.5	102.7	*9999	74.8	*9999	*9999
300	76.0	72.8	87.9	102.5	*9999	75.0	*9999	*9999
400	76.2	73.0	87.8	102.2	*9999	75.2	*9999	*9999
500	76.1	73.3	87.7	101.8	*9999	75.2	*9999	*9999
600	76.2	73.0	87.3	101.6	*9999	75.3	*9999	*9999
700	76.2	73.0	87.1	101.3	*9999	75.2	*9999	*9999
800	76.0	73.0	87.0	101.4	*9999	75.0	*9999	*9999
900	76.4	73.5	87.3	102.0	*9999	75.1	*9999	*9999
1000	76.2	73.5	87.7	102.4	*9999	75.0	*9999	*9999
1100	76.2	73.4	87.8	102.8	*9999	75.2	*9999	*9999
1200	76.4	74.0	87.0	103.7	*9999	75.1	*9999	*9999
1300	76.4	74.2	88.4	104.1	*9999	75.1	*9999	*9999
1400	76.5	74.3	89.7	104.6	*9999	75.0	*9999	*9999
1500	76.5	74.3	89.2	104.8	*9999	75.2	*9999	*9999
1600	76.4	74.2	89.3	105.1	*9999	75.1	*9999	*9999
1700	76.5	74.2	89.6	105.5	*9999	75.0	*9999	*9999
1800	76.5	74.0	90.0	105.6	*9999	75.0	*9999	*9999
1900	76.5	74.0	90.0	105.5	*9999	74.8	*9999	*9999
2000	76.4	73.0	90.0	105.5	*9999	75.0	*9999	*9999
2100	76.4	73.7	90.2	105.4	*9999	75.1	*9999	*9999
2200	76.5	73.7	90.6	105.6	*9999	75.1	*9999	*9999
2300	76.5	73.5	90.4	105.4	*9999	75.2	*9999	*9999
2400	76.5	73.4	90.1	105.1	*9999	75.0	*9999	*9999

TABLE 157. DAILY WATER TEMPERATURE (F) DATA.  
QUAD-CITIES STATION, JULY 7, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		---DOWNSTREAM SENSORS---			
			COLD END	DISCHARGE	A	B	C	D
100	76.5	73.3	90.0	104.7	*9999	75.2	*9999	*9999
200	76.5	73.3	90.0	104.5	*9999	75.2	*9999	*9999
300	76.5	73.3	90.0	104.5	*9999	75.2	*9999	*9999
400	76.5	73.2	89.8	104.1	*9999	75.3	*9999	*9999
500	76.5	73.1	89.0	103.5	*9999	75.3	*9999	*9999
600	76.5	73.2	89.9	103.3	*9999	75.2	*9999	*9999
700	76.5	73.2	88.9	103.0	*9999	75.2	*9999	*9999
800	76.5	73.3	88.7	103.1	*9999	75.3	*9999	*9999
900	76.5	73.4	88.7	103.5	*9999	75.2	*9999	*9999
1000	76.5	73.5	89.3	103.5	*9999	75.2	*9999	*9999
1100	76.5	73.5	89.0	103.8	*9999	75.1	*9999	*9999
1200	76.5	73.8	89.5	104.5	*9999	75.2	*9999	*9999
1300	76.5	73.7	89.7	105.1	*9999	75.2	*9999	*9999
1400	76.6	74.4	90.1	105.9	*9999	75.4	*9999	*9999
1500	76.8	74.5	90.2	106.3	*9999	75.3	*9999	*9999
1600	76.9	74.8	90.3	106.9	*9999	75.5	*9999	*9999
1700	76.8	74.7	90.5	106.6	*9999	75.5	*9999	*9999
1800	76.8	74.7	90.6	106.6	*9999	75.6	*9999	*9999
1900	76.7	74.6	90.5	106.5	*9999	75.4	*9999	*9999
2000	76.7	74.5	90.6	106.3	*9999	75.3	*9999	*9999
2100	76.7	74.4	90.9	106.3	*9999	75.3	*9999	*9999
2200	76.6	74.1	90.9	106.2	*9999	75.4	*9999	*9999
2300	76.6	74.0	91.0	106.2	*9999	75.3	*9999	*9999
2400	76.6	73.9	91.0	106.0	*9999	75.3	*9999	*9999

TABLE 158. DAILY WATER TEMPERATURE (F) DATA.  
QUAD-CITIES STATION, JULY 8, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		---DOWNSTREAM SENSORS---			
			COLD END	DISCHARGE	A	B	C	D
100	76.5	73.8	90.6	105.7	*9999	75.6	*9999	*9999
200	76.6	73.7	90.5	105.3	*9999	75.7	*9999	*9999
300	76.6	73.7	90.0	105.2	*9999	75.7	*9999	*9999
400	76.7	73.7	90.0	103.6	*9999	75.7	*9999	*9999
500	76.6	73.7	89.6	99.6	*9999	75.7	*9999	*9999
600	76.6	73.7	89.5	99.4	*9999	75.7	*9999	*9999
700	76.7	73.9	89.0	99.0	*9999	76.0	*9999	*9999
800	76.6	74.0	89.1	99.5	*9999	75.8	*9999	*9999
900	77.0	74.1	89.0	101.9	*9999	75.7	*9999	*9999
1000	76.6	74.3	88.7	103.0	*9999	75.8	*9999	*9999
1100	76.6	74.6	89.2	104.0	*9999	75.7	*9999	*9999
1200	76.6	74.3	89.8	105.0	*9999	75.7	*9999	*9999
1300	76.6	75.0	90.0	105.8	*9999	75.8	*9999	*9999
1400	76.7	75.1	91.0	107.0	*9999	75.9	*9999	*9999
1500	76.7	75.5	91.2	108.1	*9999	76.0	*9999	*9999
1600	76.6	75.5	91.5	108.6	*9999	76.0	*9999	*9999
1700	76.6	75.5	92.0	109.0	*9999	76.1	*9999	*9999
1800	76.6	75.4	92.1	109.0	*9999	75.1	*9999	*9999
1900	76.7	75.4	92.5	108.9	*9999	75.8	*9999	*9999
2000	76.6	75.2	92.7	109.0	*9999	75.8	*9999	*9999
2100	76.5	75.0	92.9	109.1	*9999	75.7	*9999	*9999
2200	76.6	74.9	93.0	108.9	*9999	75.8	*9999	*9999
2300	76.6	74.9	93.0	108.6	*9999	75.9	*9999	*9999
2400	76.6	74.8	93.0	108.4	*9999	76.0	*9999	*9999

\*9999 OR 9999 -- INSTRUMENT MALFUNCTION

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TABLE 15.4. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JULY 9, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL			DOWNSTREAM SENSORS---		
		DISCHARGE			A		
		TEMP	DISCHARGE	INTAKE	TEMP	DISCHARGE	INTAKE
100	76.7	92.7	108.0	9999	76.1	9999	9999
200	76.9	92.7	108.0	9999	76.1	9999	9999
300	77.0	92.6	107.8	9999	75.2	9999	9999
400	76.8	92.5	107.6	9999	76.5	9999	9999
500	76.6	92.3	107.7	9999	76.9	9999	9999
600	76.7	92.3	107.5	9999	76.7	9999	9999
700	76.6	91.5	107.3	9999	77.2	9999	9999
800	76.5	91.7	107.5	9999	76.9	9999	9999
900	76.6	91.8	107.5	9999	77.1	9999	9999
1000	76.7	91.8	107.6	9999	77.1	9999	9999
1100	76.9	92.3	108.0	9999	77.0	9999	9999
1200	76.9	92.7	109.0	9999	77.0	9999	9999
1300	76.9	93.2	109.6	9999	77.2	9999	9999
1400	77.0	93.4	110.1	9999	77.2	9999	9999
1500	77.0	93.6	110.7	9999	77.2	9999	9999
1600	77.0	94.0	111.5	9999	77.2	9999	9999
1700	77.0	94.4	112.2	9999	77.2	9999	9999
1800	77.2	94.5	112.1	9999	77.2	9999	9999
1900	77.4	94.5	112.1	9999	77.2	9999	9999
2000	77.0	94.5	111.5	9999	77.2	9999	9999
2100	77.0	94.7	111.5	9999	77.2	9999	9999
2200	77.5	94.3	111.3	9999	77.2	9999	9999
2300	77.1	94.7	111.0	9999	77.2	9999	9999
2400	77.2	94.8	110.8	9999	77.2	9999	9999

TABLE 16.3. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JULY 10, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL			DOWNSTREAM SENSORS---		
		DISCHARGE			A		
		TEMP	DISCHARGE	INTAKE	TEMP	DISCHARGE	INTAKE
100	77.1	94.5	110.4	9999	77.1	9999	9999
200	77.0	94.3	110.4	9999	77.1	9999	9999
300	77.1	94.2	110.3	9999	77.3	9999	9999
400	77.0	93.9	110.0	9999	77.2	9999	9999
500	77.3	93.9	109.8	9999	77.5	9999	9999
600	76.9	93.4	109.5	9999	77.2	9999	9999
700	76.9	93.4	109.5	9999	77.4	9999	9999
800	77.1	92.2	109.6	9999	77.3	9999	9999
900	77.3	93.2	109.3	9999	77.2	9999	9999
1000	77.0	93.5	110.4	9999	77.2	9999	9999
1100	77.0	94.0	110.0	9999	77.2	9999	9999
1200	77.0	94.0	110.0	9999	77.2	9999	9999
1300	77.0	94.0	110.0	9999	77.2	9999	9999
1400	77.0	94.0	110.0	9999	77.2	9999	9999
1500	77.0	94.0	110.0	9999	77.2	9999	9999
1600	77.0	94.0	110.0	9999	77.2	9999	9999
1700	77.0	94.0	110.0	9999	77.2	9999	9999
1800	77.0	94.0	110.0	9999	77.2	9999	9999
1900	77.0	94.0	110.0	9999	77.2	9999	9999
2000	77.0	94.0	110.0	9999	77.2	9999	9999
2100	77.0	94.0	110.0	9999	77.2	9999	9999
2200	77.0	94.0	110.0	9999	77.2	9999	9999
2300	77.0	94.0	110.0	9999	77.2	9999	9999
2400	77.0	94.0	110.0	9999	77.2	9999	9999

TABLE 16.2. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JULY 12, 1979

TIME	UPSTREAM INTAKE	COOLING CANAL			DOWNSTREAM SENSORS---		
		DISCHARGE			A		
		TEMP	DISCHARGE	INTAKE	TEMP	DISCHARGE	INTAKE
100	77.8	94.4	109.6	9999	77.8	9999	9999
200	77.9	95.0	110.2	9999	78.2	9999	9999
300	77.1	95.3	110.5	9999	78.3	9999	9999
400	77.1	95.6	111.0	9999	78.5	9999	9999
500	77.3	95.6	111.5	9999	78.5	9999	9999
600	77.3	94.4	110.8	9999	78.5	9999	9999
700	77.3	94.4	110.8	9999	78.5	9999	9999
800	77.8	94.4	110.8	9999	78.5	9999	9999
900	77.0	94.4	109.6	9999	77.9	9999	9999
1000	77.0	95.0	110.2	9999	78.3	9999	9999
1100	77.1	95.3	110.5	9999	78.3	9999	9999
1200	77.1	95.6	111.0	9999	78.3	9999	9999
1300	77.3	95.6	111.5	9999	78.5	9999	9999
1400	77.3	94.4	110.8	9999	78.5	9999	9999
1500	77.3	94.4	110.8	9999	78.5	9999	9999
1600	77.8	94.7	110.8	9999	78.5	9999	9999
1700	77.0	95.0	110.2	9999	78.6	9999	9999
1800	77.0	95.0	110.2	9999	78.6	9999	9999
1900	77.0	95.6	110.9	9999	78.7	9999	9999
2000	77.0	95.5	110.9	9999	78.7	9999	9999
2100	77.1	95.7	111.5	9999	78.6	9999	9999
2200	77.1	95.8	111.5	9999	78.3	9999	9999
2300	77.9	95.5	111.2	9999	78.3	9999	9999
2400	77.9	95.6	111.0	9999	78.3	9999	9999

TABLE 163. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, JULY 13, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		---DOWNSTREAM SENSORS---			
			COLD END	DISCHARGE	A	B	C	D
100	9999	78.1	79.1	110.9	9999	79.0	79.6	9999
200	9999	78.3	95.0	110.9	9999	78.8	79.2	9999
300	9999	78.3	95.0	110.5	9999	79.3	79.0	9999
400	9999	78.3	94.5	110.4	9999	79.2	79.4	9999
500	9999	78.4	94.5	110.3	9999	79.3	79.5	9999
600	9999	78.4	94.3	110.1	9999	79.0	79.0	9999
700	9999	78.5	94.0	110.3	9999	79.0	78.5	9999
800	9999	78.5	94.0	110.0	9999	79.0	78.6	9999
900	9999	78.5	94.2	110.3	9999	78.8	79.2	9999
1000	9999	78.6	94.4	110.4	9999	78.9	79.0	9999
1100	9999	78.6	94.6	110.9	9999	78.9	79.1	9999
1200	79.2	78.7	95.2	111.3	9999	78.8	79.0	9999
1300	9999	78.4	92.6	110.0	9999	79.9	9999	9999
1400	80.0	79.6	94.0	112.4	9999	79.6	9999	9999
1500	79.5	79.5	93.4	110.0	9999	79.5	9999	9999
1600	80.4	79.3	93.0	109.5	9999	78.9	9999	9999
1700	79.9	78.3	93.0	108.7	9999	78.1	9999	9999
1800	79.9	78.0	93.3	108.8	9999	77.9	9999	9999
1900	79.9	78.0	93.7	109.3	9999	77.8	9999	9999
2000	80.0	77.7	93.7	109.3	9999	77.9	9999	9999
2100	79.9	77.6	94.3	109.3	9999	77.7	9999	9999
2200	79.3	77.5	94.3	109.1	9999	77.6	9999	9999
2300	9999	78.2	91.6	108.5	9999	78.7	9999	9999
2400	9999	78.3	93.6	109.3	9999	78.8	9999	9999

TABLE 164. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, JULY 14, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		---DOWNSTREAM SENSORS---			
			COLD END	DISCHARGE	A	B	C	D
100	79.1	78.5	92.3	108.0	9999	78.7	9999	9999
200	79.5	77.5	93.2	108.2	9999	78.3	9999	9999
300	78.6	78.0	92.0	105.4	9999	77.2	9999	9999
400	79.5	78.0	92.5	105.5	9999	78.2	9999	9999
500	78.8	78.0	92.5	106.0	9999	78.3	9999	9999
600	78.9	78.4	91.9	106.7	9999	78.0	9999	9999
700	9999	78.0	91.7	106.4	9999	77.7	9999	9999
800	9999	78.0	91.4	106.5	9999	77.7	9999	9999
900	9999	78.0	91.6	106.5	9999	77.7	9999	9999
1000	77.2	78.0	92.1	108.0	9999	77.3	9999	9999
1100	76.7	77.5	92.2	110.9	9999	76.9	9999	9999
1200	77.3	77.3	93.0	108.1	9999	76.8	9999	9999
1300	77.3	77.4	93.4	108.8	9999	77.0	9999	9999
1400	77.4	77.3	93.4	109.8	9999	76.8	9999	9999
1500	77.6	77.5	93.7	9999	9999	76.8	9999	9999
1600	77.4	77.6	94.1	114.0	9999	77.0	9999	9999
1700	77.6	77.7	94.8	110.4	9999	77.2	9999	9999
1800	77.7	77.8	95.5	110.6	9999	77.1	9999	9999
1900	77.7	77.8	95.5	111.3	9999	77.3	9999	9999
2000	77.7	77.5	96.0	112.3	9999	77.5	9999	9999
2100	77.7	77.5	96.1	112.0	9999	77.6	9999	9999
2200	77.7	77.7	96.4	110.5	9999	77.7	9999	9999
2300	77.8	77.6	96.4	112.0	9999	77.8	9999	9999
2400	78.2	77.8	96.5	111.1	9999	77.7	9999	9999

TABLE 165. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, JULY 15, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		---DOWNSTREAM SENSORS---			
			COLD END	DISCHARGE	A	B	C	D
100	77.9	77.5	95.5	110.6	9999	77.6	9999	9999
200	78.2	77.5	95.7	110.1	9999	77.7	9999	9999
300	78.2	77.6	95.1	111.4	9999	77.8	9999	9999
400	78.2	77.6	95.0	110.6	9999	77.8	9999	9999
500	78.3	77.7	93.7	111.0	9999	78.0	9999	9999
600	78.4	77.8	94.9	110.0	9999	78.1	9999	9999
700	79.0	78.0	94.5	109.2	9999	78.0	9999	9999
800	78.3	77.7	94.0	111.0	9999	78.1	9999	9999
900	78.2	77.5	93.7	113.6	9999	78.1	9999	9999
1000	78.2	77.5	93.7	109.0	9999	78.0	9999	9999
1100	78.2	77.9	94.0	109.4	9999	78.3	9999	9999
1200	78.3	78.0	94.3	110.0	9999	78.3	9999	9999
1300	78.3	78.4	94.9	110.6	9999	78.5	9999	9999
1400	78.5	78.6	95.1	111.4	9999	78.6	9999	9999
1500	78.6	78.9	95.2	113.0	9999	78.8	9999	9999
1600	78.7	79.1	95.4	114.5	9999	78.8	9999	9999
1700	78.7	79.2	95.8	114.2	9999	78.8	9999	9999
1800	79.0	79.2	96.0	113.5	9999	78.9	9999	9999
1900	78.7	79.3	96.1	113.1	9999	78.8	9999	9999
2000	78.7	79.2	95.1	115.0	9999	78.8	9999	9999
2100	78.6	78.9	96.2	113.7	9999	78.7	9999	9999
2200	78.5	78.8	96.5	112.8	9999	78.7	9999	9999
2300	78.5	79.7	96.5	114.8	9999	78.6	9999	9999
2400	78.6	78.4	96.3	114.5	9999	78.6	9999	9999

TABLE 166. DAILY WATER TEMPERATURE (F) DATA,  
QUAD-CITIES STATION, JULY 16, 1979

TIME	UPSTREAM	INTAKE	COOLING CANAL		---DOWNSTREAM SENSORS---			
			COLD END	DISCHARGE	A	B	C	D
100	78.6	78.5	95.5	112.7	9999	78.6	9999	9999
200	78.6	78.4	95.0	115.0	9999	78.7	9999	9999
300	78.6	78.3	94.6	111.2	9999	78.8	9999	9999
400	78.7	79.2	94.0	109.7	9999	78.7	9999	9999
500	78.6	78.2	93.5	109.5	9999	78.9	9999	9999
600	78.6	78.3	93.2	109.2	9999	78.9	9999	9999
700	78.7	78.2	92.9	108.8	9999	79.0	9999	9999
800	78.7	78.2	92.9	109.3	9999	79.2	9999	9999
900	78.7	78.3	92.7	108.7	9999	79.1	9999	9999
1000	78.7	78.5	93.1	109.2	9999	79.3	9999	9999
1100	78.7	78.8	93.3	109.5	9999	79.3	9999	9999
1200	78.8	79.2	93.6	110.0	9999	79.3	9999	9999
1300	78.5	79.3	93.6	110.2	9999	78.9	9999	9999
1400	78.5	79.5	94.0	110.6	9999	79.2	9999	9999
1500	78.6	79.5	94.0	111.0	9999	79.2	9999	9999
1600	78.6	79.5	94.0	111.3	9999	79.0	9999	9999
1700	78.5	79.6	94.0	111.5	9999	79.0	9999	9999
1800	78.5	79.5	94.0	111.3	9999	79.0	9999	9999
1900	78.6	79.4	93.9	111.1	9999	78.9	9999	9999
2000	78.5	79.0	93.7	111.5	9999	78.8	9999	9999
2100	78.4	79.0	93.5	112.4	9999	78.8	9999	9999
2200	78.3	78.6	93.5	111.6	9999	78.6	9999	9999
2300	78.2	78.5	93.0	110.5	9999	78.5	9999	9999
2400	78.2	78.2	92.7	109.4	9999	78.4	9999	9999

\*9999 OR 9999 -- INSTRUMENT MALFUNCTION

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TABLE 167. DAILY WATER TEMPERATURE (FT) DATA, QUAD-CITIES STATION, JULY 17, 1979

TIME	UPSTREAM INTAKE		DISCHARGE		DOWNSTREAM SENSORS		UPSTREAM SENSORS	
	A	B	A	B	C	D	A	B
100	78.3	71.0	138.5	93.9	78.5	73.5	77.9	73.0
200	78.0	78.3	128.0	91.8	79.6	79.6	77.2	78.0
300	78.1	78.0	107.5	91.6	79.5	79.5	77.1	78.3
400	78.5	77.2	107.2	91.2	79.5	79.5	77.0	78.5
500	78.4	77.8	126.8	92.9	79.0	79.0	77.0	78.5
600	78.2	78.0	126.5	92.5	79.3	79.3	77.9	78.5
700	78.0	78.0	126.3	92.3	79.5	79.5	77.3	78.4
800	78.0	78.1	126.2	92.8	79.5	79.5	77.0	78.4
900	77.8	78.3	126.5	92.0	79.5	79.5	77.0	78.5
1000	77.8	78.3	126.5	92.4	79.3	79.3	77.2	78.5
1100	77.4	78.5	107.2	92.8	79.7	79.7	77.9	78.5
1200	77.8	78.3	107.6	91.1	79.2	79.2	77.9	78.5
1300	78.2	78.9	127.7	91.2	79.4	79.4	78.0	78.6
1400	78.3	78.8	127.8	91.1	78.5	78.5	78.2	78.6
1500	78.2	78.3	128.1	91.3	78.5	78.5	78.2	78.6
1600	78.2	78.5	129.0	91.2	78.5	78.5	78.2	78.6
1700	78.2	78.6	128.5	91.5	78.5	78.5	78.2	78.6
1800	78.3	78.5	128.6	91.7	78.5	78.5	78.2	78.6
1900	78.1	78.6	128.9	92.2	78.6	78.6	78.2	78.6
2000	78.2	78.2	128.7	92.2	78.5	78.5	78.2	78.6
2100	78.0	78.3	129.0	92.0	78.5	78.5	78.2	78.6
2200	78.0	78.0	127.8	92.0	78.6	78.6	78.1	78.6
2300	78.0	77.5	127.7	91.9	78.6	78.6	78.1	78.6
2400	78.1	77.5	127.3	92.7	78.6	78.6	78.1	78.6

TABLE 168. DAILY WATER TEMPERATURE (FT) DATA, QUAD-CITIES STATION, JULY 18, 1979

TIME	UPSTREAM INTAKE		DISCHARGE		DOWNSTREAM SENSORS		UPSTREAM SENSORS	
	A	B	A	B	C	D	A	B
100	77.9	77.3	137.0	91.3	78.0	78.0	77.9	78.0
200	77.9	77.2	137.0	91.5	78.6	78.6	77.0	78.0
300	78.0	77.1	136.7	91.1	78.5	78.5	77.0	78.0
400	78.0	77.0	136.3	91.0	78.5	78.5	77.2	78.5
500	78.0	77.0	135.9	91.5	78.5	78.5	77.2	78.5
600	78.2	77.3	135.6	91.5	78.4	78.4	77.1	78.5
700	78.2	77.0	135.5	91.5	78.4	78.4	77.2	78.5
800	78.2	77.0	135.5	91.3	78.5	78.5	77.1	78.5
900	78.0	77.2	135.5	90.3	78.5	78.5	77.1	78.5
1000	78.0	77.5	135.5	90.6	78.5	78.5	77.1	78.5
1100	77.9	77.9	138.4	91.3	78.5	78.5	77.2	78.5
1200	78.0	78.0	137.9	91.5	78.6	78.6	77.3	78.5
1300	78.0	78.3	138.2	91.6	78.6	78.6	77.2	78.5
1400	78.2	78.2	138.8	91.5	78.6	78.6	77.2	78.5
1500	78.2	78.2	139.8	91.5	78.6	78.6	77.3	78.5
1600	78.2	78.2	139.5	91.6	78.6	78.6	77.3	78.5
1700	78.5	79.0	139.2	91.8	78.6	78.6	77.5	78.5
1800	78.4	79.0	139.6	92.2	78.5	78.5	77.5	78.5
1900	78.2	78.8	139.2	92.0	78.5	78.5	77.5	78.5
2000	78.2	78.5	139.2	92.2	78.5	78.5	77.5	78.5
2100	78.2	78.4	139.8	92.1	78.6	78.6	77.5	78.5
2200	78.1	78.1	139.5	92.2	78.7	78.7	77.5	78.5
2300	78.0	77.2	138.1	92.1	78.7	78.7	77.5	78.5
2400	78.1	77.6	137.9	92.2	78.6	78.6	77.4	78.5

TABLE 170. DAILY WATER TEMPERATURE (FT) DATA, QUAD-CITIES STATION, JULY 20, 1979

TIME	UPSTREAM INTAKE		DISCHARGE		DOWNSTREAM SENSORS		UPSTREAM SENSORS	
	A	B	A	B	C	D	A	B
100	78.2	77.6	127.5	92.1	78.8	78.8	78.3	78.0
200	78.4	77.5	127.5	94.1	78.4	78.4	78.0	78.0
300	78.2	77.8	127.4	92.0	78.0	78.0	77.8	78.0
400	78.3	77.5	127.2	91.5	78.7	78.7	77.8	78.0
500	78.5	77.5	126.7	91.6	78.9	78.9	77.7	78.4
600	78.5	77.7	126.6	91.3	78.9	78.9	77.5	78.9
700	78.4	77.7	126.5	91.0	78.8	78.8	77.5	78.7
800	78.6	78.0	126.6	91.4	78.9	78.9	77.6	78.8
900	78.6	78.3	128.4	91.3	78.9	78.9	77.7	78.8
1000	78.6	78.6	128.5	91.7	79.0	79.0	77.8	79.0
1100	78.6	79.2	128.2	91.3	79.0	79.0	77.8	79.0
1200	78.6	79.2	129.0	92.0	79.0	79.0	77.8	79.0
1300	78.6	79.5	129.0	92.0	79.0	79.0	77.8	79.0
1400	78.6	79.3	130.0	92.0	79.0	79.0	77.8	79.0
1500	78.7	80.0	131.5	92.4	79.0	79.0	77.8	79.0
1600	79.0	80.0	132.3	92.3	79.0	79.0	77.8	79.0
1700	78.8	80.0	131.5	92.3	79.0	79.0	77.8	79.0
1800	78.8	79.8	130.9	93.0	78.9	78.9	77.8	79.0
1900	78.7	79.8	130.5	93.0	78.9	78.9	77.8	79.0
2000	78.5	79.5	131.5	93.1	78.8	78.8	77.8	79.0
2100	78.8	79.5	131.0	93.2	78.9	78.9	77.8	79.0
2200	78.8	79.8	131.0	93.0	78.9	78.9	77.8	79.0
2300	78.5	78.6	129.5	93.0	78.8	78.8	77.8	79.0
2400	78.5	78.4	129.0	92.8	78.8	78.8	77.8	79.0

TABLE 171. DAILY WATER TEMPERATURE (FT) DATA, QUAD-CITIES STATION, JULY 20, 1979

TIME	UPSTREAM INTAKE		DISCHARGE		DOWNSTREAM SENSORS		UPSTREAM SENSORS	
	A	B	A	B	C	D	A	B
100	78.3	79.0	138.5	92.0	78.7	78.7	78.7	78.7
200	78.1	78.0	138.4	92.2	78.8	78.8	78.6	78.7
300	78.1	77.8	138.0	92.2	78.8	78.8	78.6	78.7
400	78.0	77.7	137.4	91.5	78.8	78.8	78.6	78.7
500	78.0	77.5	136.0	91.2	78.7	78.7	78.7	78.7
600	78.2	77.5	136.6	91.0	78.8	78.8	78.7	78.7
700	78.1	77.6	137.0	91.0	78.7	78.7	78.7	78.7
800	78.1	77.7	136.6	90.5	78.7	78.7	78.7	78.7
900	78.3	78.0	138.0	90.0	78.8	78.8	78.7	78.7
1000	78.2	78.2	137.6	91.3	78.8	78.8	78.7	78.7
1100	78.4	78.6	138.4	92.2	78.9	78.9	78.7	78.7
1200	78.5	79.2	139.2	92.4	78.9	78.9	78.7	78.7
1300	78.5	79.5	139.9	92.6	78.9	78.9	78.7	78.7
1400	78.5	79.8	139.9	93.0	78.9	78.9	78.7	78.7
1500	78.8	80.1	141.1	93.3	78.9	78.9	78.7	78.7
1600	78.5	80.4	141.0	93.5	78.9	78.9	78.7	78.7
1700	78.5	80.5	141.9	93.5	78.9	78.9	78.7	78.7
1800	78.6	80.4	141.8	93.3	78.9	78.9	78.7	78.7
1900	78.6	80.4	141.9	94.1	78.8	78.8	78.7	78.7
2000	78.5	80.2	141.2	94.1	78.8	78.8	78.7	78.7
2100	78.4	79.5	141.1	94.1	78.8	78.8	78.7	78.7
2200	78.4	79.4	141.1	94.3	78.8	78.8	78.7	78.7
2300	78.2	79.0	140.5	94.3	78.8	78.8	78.7	78.7
2400	78.2	78.0	140.6	94.0	78.8	78.8	78.7	78.7

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TABLE 172. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JULY 22, 1979

TIME	COOLING CHANNEL				DISCHARGE				UPSTREAM				DOWNSTREAM				
	INTAKE		TEMP		TEMP		TEMP		TEMP		TEMP		TEMP		TEMP		
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	
100	78.2	79.5	93.3	109.0	78.7	78.7	79.5	9999	100	78.1	79.0	91.2	102.0	79.0	79.0	80.5	9999
200	78.1	78.5	93.4	103.6	78.7	78.8	79.6	9999	200	78.1	78.8	91.2	102.0	79.0	79.0	80.5	9999
300	78.0	78.3	93.0	98.0	78.7	78.6	79.6	9999	300	78.1	79.0	91.0	101.3	79.0	79.0	80.5	9999
400	78.3	78.3	93.0	94.3	78.6	78.7	79.6	9999	400	78.2	78.6	90.7	98.6	79.0	79.0	80.4	9999
500	78.2	78.2	92.6	93.5	78.8	78.8	79.7	9999	500	78.2	78.5	90.7	98.0	78.9	78.9	80.3	9999
600	78.2	78.2	92.0	92.6	78.7	78.7	79.7	9999	600	78.6	78.5	90.7	97.7	78.9	78.9	80.5	9999
700	78.1	78.3	90.3	90.7	78.9	78.9	79.9	9999	700	78.2	78.5	90.2	98.3	79.1	79.1	80.5	9999
800	78.1	79.1	88.1	91.4	78.9	78.9	79.8	9999	800	78.2	78.6	89.9	99.0	79.0	79.4	80.5	9999
900	78.5	78.5	87.4	92.7	78.9	79.1	79.9	9999	900	78.6	78.7	89.6	99.8	79.0	79.4	80.5	9999
1000	78.5	78.5	87.5	93.6	78.9	79.5	79.9	9999	1000	78.2	79.0	89.6	100.1	79.0	79.4	80.6	9999
1100	78.6	79.0	87.8	93.3	78.9	79.5	79.9	9999	1100	78.5	79.0	89.8	100.9	79.1	79.3	80.6	9999
1200	78.6	79.5	87.9	95.0	78.9	79.5	80.6	9999	1200	78.5	79.4	90.6	101.7	79.2	79.5	81.0	9999
1300	78.5	79.8	88.3	96.1	78.9	79.7	80.2	9999	1300	78.9	79.8	90.7	103.8	79.2	79.7	80.9	9999
1400	79.1	80.2	89.1	97.6	78.9	80.0	80.3	9999	1400	79.0	79.4	91.5	105.0	79.4	80.0	81.0	9999
1500	78.6	80.5	89.4	98.6	79.9	80.0	80.4	9999	1500	78.6	80.6	91.8	105.8	79.4	80.2	81.0	9999
1600	78.6	80.6	89.8	99.6	79.9	80.1	80.5	9999	1600	79.0	80.5	92.0	107.2	79.4	80.2	81.0	9999
1700	78.5	80.6	90.2	99.9	79.0	80.1	80.5	9999	1700	78.9	80.6	92.4	106.8	79.5	80.2	81.0	9999
1800	78.5	80.5	90.4	101.6	79.0	80.0	80.6	9999	1800	78.9	80.5	92.5	107.1	79.6	80.0	81.2	9999
1900	78.5	80.2	90.7	102.0	79.0	79.6	80.6	9999	1900	78.5	80.2	93.4	108.0	79.2	79.8	81.0	9999
2000	78.3	80.0	91.0	101.7	79.0	79.4	80.6	9999	2000	79.4	80.2	93.4	108.0	79.2	79.8	81.0	9999
2100	78.6	79.8	91.3	101.5	79.0	79.4	80.6	9999	2100	79.5	80.2	93.6	107.8	79.2	79.5	80.8	9999
2200	78.6	79.2	91.1	101.5	79.0	79.3	80.4	9999	2200	79.5	79.5	94.0	107.5	79.1	79.2	80.6	9999
2300	78.3	79.3	91.3	101.7	79.0	79.1	80.5	9999	2300	79.1	79.1	93.6	107.5	79.1	79.1	80.5	9999
2400	78.3	79.3	91.3	101.7	79.0	79.1	80.5	9999	2400	79.1	79.1	93.6	107.5	79.1	79.1	80.5	9999

TABLE 173. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JULY 23, 1979

TIME	COOLING CHANNEL				DISCHARGE				UPSTREAM				DOWNSTREAM				
	INTAKE		TEMP		TEMP		TEMP		TEMP		TEMP		TEMP		TEMP		
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	
100	79.1	78.9	93.5	107.0	79.1	79.0	80.5	9999	100	78.9	79.5	95.0	107.9	80.6	79.7	79.8	9999
200	79.1	78.8	93.5	107.0	79.1	78.9	80.3	9999	200	79.4	79.5	94.9	107.5	80.6	79.5	79.9	9999
300	79.0	78.5	93.3	107.0	79.0	78.9	80.2	9999	300	78.8	79.4	94.6	107.3	80.6	79.3	79.7	9999
400	79.0	78.5	93.7	107.2	79.0	78.7	80.0	9999	400	78.8	79.2	94.5	107.6	80.3	79.4	79.5	9999
500	78.9	78.3	93.5	107.2	79.0	78.5	80.1	9999	500	78.8	79.2	94.6	107.5	80.6	79.2	79.1	9999
600	79.1	78.2	93.2	107.2	79.1	78.5	80.1	9999	600	78.7	79.0	94.2	107.4	80.6	79.3	78.9	9999
700	79.0	78.0	93.0	107.6	79.0	78.3	80.1	9999	700	79.0	78.9	94.3	107.6	80.5	79.4	78.4	9999
800	79.0	78.0	92.5	107.5	79.0	78.6	80.3	9999	800	78.9	78.9	94.0	107.0	80.5	79.1	78.5	9999
900	79.0	78.5	92.5	107.9	79.0	78.7	80.3	9999	900	78.9	79.0	94.5	105.3	80.5	79.5	78.4	9999
1000	79.3	78.3	93.2	108.5	79.1	78.7	80.2	9999	1000	78.5	79.0	95.3	104.6	80.1	79.4	78.0	9999
1100	79.2	78.5	93.9	108.8	79.1	78.8	80.0	9999	1100	78.5	79.1	96.6	99.9	79.7	79.0	77.7	9999
1200	79.5	78.8	94.6	109.8	79.2	79.0	80.1	9999	1200	78.6	79.3	95.3	94.0	80.3	79.0	78.5	9999
1300	79.5	79.2	94.6	109.5	79.3	79.6	80.2	9999	1300	79.6	79.8	97.0	94.5	80.5	79.2	78.5	9999
1400	79.6	80.0	94.3	108.5	79.7	79.4	80.1	9999	1400	79.9	80.5	96.7	94.0	79.8	80.0	79.8	9999
1500	79.0	80.2	94.9	109.2	80.4	79.8	80.0	9999	1500	80.0	80.5	96.4	94.0	79.3	79.9	79.6	9999
1600	79.0	80.2	94.9	109.5	80.4	80.0	80.0	9999	1600	80.0	80.5	96.2	94.7	78.5	80.0	79.3	9999
1700	79.0	80.5	95.0	109.9	80.5	80.0	80.2	9999	1700	80.0	81.5	93.7	94.0	78.5	80.2	78.7	9999
1800	79.0	80.6	95.4	110.5	80.5	80.1	80.3	9999	1800	80.0	81.2	92.3	94.0	78.9	79.7	79.1	9999
1900	79.2	80.5	95.5	110.2	80.5	80.1	80.5	9999	1900	80.0	81.2	92.0	93.0	78.5	80.4	79.5	9999
2000	79.2	80.5	95.5	110.2	80.5	80.1	80.5	9999	2000	80.0	80.7	92.0	93.0	78.5	80.2	79.1	9999
2100	79.0	80.4	95.6	110.0	80.6	80.1	80.4	9999	2100	80.0	80.6	91.6	92.6	78.7	80.1	79.0	9999
2200	79.1	80.0	96.0	109.8	80.6	80.0	80.4	9999	2200	80.0	80.6	90.5	92.6	78.9	79.9	78.0	9999
2300	79.0	80.0	95.7	109.1	80.5	79.9	80.0	9999	2300	79.5	80.0	90.5	92.5	78.9	79.4	78.0	9999
2400	78.9	79.3	95.3	108.7	80.6	79.5	79.9	9999	2400	79.5	80.2	89.5	88.8	79.0	79.5	77.4	9999

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TABLE 175. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JULY 25, 1979

TIME	UPSTREAM			DISCHARGE			DOWNSTREAM SENSORS		
	INTEAKE	TEMP. (F)		COLD	TEMP. (F)		A	TEMP. (F)	
		TEMP. (F)	TEMP. (F)		TEMP. (F)	TEMP. (F)		TEMP. (F)	TEMP. (F)
100	79.5	80.4	82.3	86.4	79.0	79.4	9299	9999	9999
200	79.4	80.3	89.2	85.0	79.0	79.4	9299	9999	9999
300	79.4	80.1	89.2	84.2	79.0	79.2	9299	9999	9999
400	79.2	80.3	88.2	85.3	79.3	79.1	9299	9999	9999
500	79.2	79.9	89.0	87.4	79.0	79.1	9299	9999	9999
600	79.1	79.8	89.0	89.2	79.1	79.2	9299	9999	9999
700	79.5	79.6	89.0	89.6	79.5	79.0	9299	9999	9999
800	79.6	79.6	89.4	89.8	80.3	78.8	9299	9999	9999
900	79.5	79.5	87.9	90.5	80.7	78.9	9299	9999	9999
1000	79.4	79.0	88.5	94.0	80.6	78.9	9299	9999	9999
1100	79.5	79.0	87.7	100.6	80.6	78.9	9299	9999	9999
1200	79.4	79.0	87.6	101.0	80.6	78.8	9299	9999	9999
1300	79.5	78.5	88.5	107.8	80.9	79.1	9299	9999	9999
1400	79.5	79.7	88.8	105.7	80.9	79.1	9299	9999	9999
1500	79.5	79.5	90.7	108.4	80.9	78.9	9299	9999	9999
1600	79.5	79.7	92.6	107.3	80.9	79.1	9299	9999	9999
1700	79.5	79.7	93.3	108.2	80.5	79.2	9299	9999	9999
1800	79.5	79.5	94.0	108.6	80.9	79.4	9299	9999	9999
1900	79.5	79.6	94.6	109.1	80.9	79.1	9299	9999	9999
2000	79.5	79.6	95.0	108.9	80.8	79.1	9299	9999	9999
2100	79.5	79.5	95.6	109.2	80.9	79.0	9299	9999	9999
2200	79.6	79.7	95.9	109.6	80.7	79.8	9299	9999	9999
2300	79.5	79.5	95.8	109.0	80.5	79.7	9299	9999	9999
2400	79.5	79.5	96.0	108.8	80.6	78.9	9299	9999	9999

TABLE 176. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JULY 26, 1979

TIME	UPSTREAM			DISCHARGE			DOWNSTREAM SENSORS		
	INTEAKE	TEMP. (F)		COLD	TEMP. (F)		A	TEMP. (F)	
		TEMP. (F)	TEMP. (F)		TEMP. (F)	TEMP. (F)		TEMP. (F)	TEMP. (F)
100	79.6	80.0	95.5	137.4	79.3	79.4	9299	9999	9999
200	79.5	80.2	95.5	106.7	79.8	79.3	9299	9999	9999
300	79.5	80.3	95.5	106.0	79.8	79.4	9299	9999	9999
400	79.4	80.3	95.2	105.5	79.5	79.5	9299	9999	9999
500	79.4	80.2	94.5	104.7	79.5	79.4	9299	9999	9999
600	79.6	80.0	94.2	104.3	79.4	79.7	9299	9999	9999
700	79.2	80.1	94.0	105.7	79.3	79.0	9299	9999	9999
800	79.2	80.0	93.7	105.0	79.4	80.1	9299	9999	9999
900	79.3	80.2	93.3	105.3	79.5	79.6	9299	9999	9999
1000	79.5	79.7	93.8	108.8	79.7	79.4	9299	9999	9999
1100	79.4	79.6	94.2	106.3	79.7	79.7	9299	9999	9999
1200	79.5	79.9	95.0	108.3	79.7	79.9	9299	9999	9999
1300	79.6	80.1	95.1	110.8	79.7	79.9	9299	9999	9999
1400	79.6	79.9	95.1	97.9	79.3	79.8	9299	9999	9999
1500	79.8	80.0	95.1	99.9	80.0	80.4	9299	9999	9999
1600	80.0	80.2	95.0	99.9	80.0	80.5	9299	9999	9999
1700	80.0	80.4	95.4	99.9	80.0	80.5	9299	9999	9999
1800	79.9	80.5	96.0	99.9	79.9	80.5	9299	9999	9999
1900	9299	80.4	93.7	9299	78.3	80.6	9299	9999	9999
2000	9299	80.5	95.6	99.9	77.4	80.7	9299	9999	9999
2100	9299	80.0	94.0	9299	77.6	80.8	9299	9999	9999
2200	9299	80.0	95.2	9299	77.1	80.9	9299	9999	9999
2300	9299	79.9	95.0	9299	9299	80.9	9299	9999	9999
2400	9299	79.8	93.0	9299	76.6	80.4	9299	9999	9999

9299 OR 9999 -- INSTRUMENT MALFUNCTION

TABLE 177. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JULY 27, 1979

TIME	UPSTREAM			DISCHARGE			DOWNSTREAM SENSORS		
	INTEAKE	TEMP. (F)		COLD	TEMP. (F)		A	TEMP. (F)	
		TEMP. (F)	TEMP. (F)		TEMP. (F)	TEMP. (F)		TEMP. (F)	TEMP. (F)
100	79.5	79.5	95.5	139.4	80.5	80.5	9299	9999	9999
200	79.5	79.5	95.6	138.5	80.5	80.5	9299	9999	9999
300	79.5	79.0	95.6	138.6	80.3	78.9	9299	9999	9999
400	79.4	78.8	95.4	138.3	80.2	79.9	9299	9999	9999
500	79.4	78.7	95.3	138.4	80.2	79.0	9299	9999	9999
600	79.0	78.6	95.2	138.0	80.1	79.0	9299	9999	9999
700	79.8	78.5	94.8	136.5	80.4	78.8	9299	9999	9999
800	79.0	78.5	94.0	139.3	79.7	78.7	9299	9999	9999
900	79.4	78.3	94.0	139.0	79.8	78.4	9299	9999	9999
1000	79.3	78.4	94.5	137.6	79.7	78.4	9299	9999	9999
1100	79.4	78.5	93.9	136.6	79.8	78.6	9299	9999	9999
1200	79.2	78.9	94.2	117.5	79.8	78.9	9299	9999	9999
1300	79.5	79.0	94.5	113.7	79.3	79.9	9299	9999	9999
1400	79.5	79.3	95.0	112.6	79.8	78.9	9299	9999	9999
1500	79.6	79.5	95.2	110.7	79.9	79.4	9299	9999	9999
1600	79.6	79.6	95.5	110.0	79.8	79.6	9299	9999	9999
1700	79.8	80.1	95.7	110.9	79.9	79.6	9299	9999	9999
1800	79.8	80.4	96.0	109.8	79.9	79.6	9299	9999	9999
1900	79.6	80.2	96.0	110.0	79.8	79.6	9299	9999	9999
2000	79.6	80.0	95.9	109.3	79.9	79.6	9299	9999	9999
2100	79.6	80.0	95.1	110.6	79.7	79.3	9299	9999	9999
2200	79.5	80.3	96.0	108.0	79.8	79.4	9299	9999	9999

TABLE 178. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JULY 28, 1979

TIME	UPSTREAM			DISCHARGE			DOWNSTREAM SENSORS		
	INTEAKE	TEMP. (F)		COLD	TEMP. (F)		A	TEMP. (F)	
		TEMP. (F)	TEMP. (F)		TEMP. (F)	TEMP. (F)		TEMP. (F)	TEMP. (F)
100	79.5	79.5	91.8	99.9	77.0	80.5	9299	9999	9999
200	79.4	79.4	91.0	99.9	76.8	80.7	9299	9999	9999
300	79.2	79.2	91.5	99.9	77.2	80.0	9299	9999	9999
400	79.3	79.3	90.5	99.9	73.0	72.8	9299	9999	9999
500	79.3	79.3	91.6	99.9	77.9	79.9	9299	9999	9999
600	79.1	79.1	93.4	99.9	75.5	79.8	9299	9999	9999
700	79.1	79.1	93.7	99.9	78.5	79.5	9299	9999	9999
800	79.0	79.0	92.8	99.9	78.7	79.5	9299	9999	9999
900	79.0	79.0	92.3	99.9	75.9	79.3	9299	9999	9999
1000	79.0	79.0	92.3	99.9	78.8	79.3	9299	9999	9999
1100	79.3	79.3	93.1	99.9	78.8	79.7	9299	9999	9999
1200	79.5	79.5	93.9	99.9	78.8	79.7	9299	9999	9999
1300	80.1	80.1	94.5	99.9	78.8	80.0	9299	9999	9999
1400	80.5	80.5	94.7	99.9	71.8	80.2	9299	9999	9999
1500	80.7	80.7	94.7	99.9	78.9	80.1	9299	9999	9999
1600	81.0	81.0	94.9	99.9	79.0	80.2	9299	9999	9999
1700	81.2	81.2	95.1	99.9	79.9	80.6	9299	9999	9999
1800	81.5	81.5	95.6	99.9	79.0	81.0	9299	9999	9999
1900	81.6	81.6	95.8	99.9	79.0	80.5	9299	9999	9999
2000	81.0	81.0	96.1	99.9	79.0	80.5	9299	9999	9999
2100	80.9	80.9	96.0	99.9	79.0	80.3	9299	9999	9999
2200	80.7	80.7	96.0	99.9	79.1	80.1	9299	9999	9999
2300	80.7	80.7	96.3	99.9	79.1	80.3	9299	9999	9999
2400	80.5	80.5	95.1	99.9	79.3	80.0	9299	9999	9999
2400	80.1	80.1	96.0	99.9	78.9	80.0	9299	9999	9999

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TABLE 179. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JULY 29, 1979

TIME	COOLING CHANNEL				COOLING CHANNEL				
	UPSTREAM		INTAKE		DISCHARGE		DOWNSTREAM		
	A	B	A	B	A	B	A	B	
100	9999	80.0	9999	79.0	79.5	9999	9999	9999	9999
200	9999	79.8	9999	79.0	79.5	9999	9999	9999	9999
300	9999	79.7	9999	79.0	79.5	9999	9999	9999	9999
400	9999	79.6	9999	79.0	79.6	9999	9999	9999	9999
500	9999	79.5	9999	79.0	79.6	9999	9999	9999	9999
600	9999	79.5	9999	79.0	79.6	9999	9999	9999	9999
700	9999	79.5	9999	79.0	79.5	9999	9999	9999	9999
800	9999	79.4	9999	78.9	79.5	9999	9999	9999	9999
900	9999	79.3	9999	78.9	79.5	9999	9999	9999	9999
1000	9999	79.4	9999	78.9	79.8	9999	9999	9999	9999
1100	9999	79.5	9999	78.9	79.8	9999	9999	9999	9999
1200	9999	80.0	9999	79.1	80.0	9999	9999	9999	9999
1300	9999	80.1	9999	79.1	80.1	9999	9999	9999	9999
1400	9999	80.6	9999	79.1	80.2	9999	9999	9999	9999
1500	9999	80.6	9999	79.1	80.5	9999	9999	9999	9999
1600	9999	81.0	9999	79.2	80.5	9999	9999	9999	9999
1700	9999	81.1	9999	79.2	80.5	9999	9999	9999	9999
1800	9999	81.3	9999	79.3	80.7	9999	9999	9999	9999
1900	9999	81.3	9999	79.3	80.5	9999	9999	9999	9999
2000	9999	80.2	9999	79.1	80.5	9999	9999	9999	9999
2100	9999	81.2	9999	79.1	80.6	9999	9999	9999	9999
2200	9999	81.0	9999	78.9	80.5	9999	9999	9999	9999
2300	9999	80.4	9999	78.0	80.0	9999	9999	9999	9999
2400	9999	80.6	9999	77.2	80.3	9999	9999	9999	9999

TABLE 180. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JULY 30, 1979

TIME	COOLING CHANNEL				COOLING CHANNEL				
	UPSTREAM		INTAKE		DISCHARGE		DOWNSTREAM		
	A	B	A	B	A	B	A	B	
100	9999	80.0	9999	79.1	79.5	9999	9999	9999	9999
200	9999	80.0	9999	79.1	79.5	9999	9999	9999	9999
300	9999	79.8	9999	79.1	79.5	9999	9999	9999	9999
400	9999	79.5	9999	78.8	79.5	9999	9999	9999	9999
500	9999	79.4	9999	78.1	79.5	9999	9999	9999	9999
600	9999	79.5	9999	78.1	79.5	9999	9999	9999	9999
700	9999	79.5	9999	78.2	79.7	9999	9999	9999	9999
800	9999	79.4	9999	78.2	79.7	9999	9999	9999	9999
900	9999	79.1	9999	78.2	79.7	9999	9999	9999	9999
1000	9999	79.0	9999	78.2	79.7	9999	9999	9999	9999
1100	9999	79.1	9999	78.2	79.7	9999	9999	9999	9999
1200	9999	78.8	9999	78.1	78.8	9999	9999	9999	9999
1300	9999	78.1	9999	78.1	79.0	9999	9999	9999	9999
1400	9999	78.2	9999	78.2	79.3	9999	9999	9999	9999
1500	9999	78.2	9999	78.2	79.7	9999	9999	9999	9999
1600	9999	78.5	9999	78.2	79.7	9999	9999	9999	9999
1700	9999	80.1	9999	78.4	80.1	9999	9999	9999	9999
1800	9999	80.3	9999	78.0	80.3	9999	9999	9999	9999
1900	9999	80.3	9999	78.4	80.3	9999	9999	9999	9999
2000	9999	78.4	9999	78.4	80.2	9999	9999	9999	9999
2100	9999	78.3	9999	78.3	80.1	9999	9999	9999	9999
2200	9999	78.3	9999	78.3	80.0	9999	9999	9999	9999
2300	9999	78.0	9999	78.0	80.0	9999	9999	9999	9999
2400	9999	78.0	9999	78.0	80.0	9999	9999	9999	9999

TABLE 181. DAILY WATER TEMPERATURE (F) DATA, QUAD-CITIES STATION, JULY 31, 1979

TIME	COOLING CHANNEL				COOLING CHANNEL			
	UPSTREAM		INTAKE		DISCHARGE		DOWNSTREAM	
	A	B	A	B	A	B	A	B
100	78.3	79.3	97.2	110.7	73.5	30.6	91.9	9999
200	78.5	79.0	96.5	110.5	78.6	30.6	81.9	9999
300	78.8	78.8	96.0	110.0	73.7	30.6	82.1	9999
400	78.7	78.7	95.5	109.0	78.7	30.4	81.8	9999
500	79.1	78.5	95.0	108.4	78.7	30.4	81.7	9999
600	79.5	78.5	94.2	107.7	78.7	30.2	81.7	9999
700	79.5	78.4	94.2	107.6	78.8	30.0	81.7	9999
800	79.5	78.2	93.6	105.5	78.7	30.0	81.4	9999
900	79.5	78.0	93.4	105.6	78.9	30.5	81.4	9999
1000	79.6	78.3	93.4	106.5	78.9	30.6	81.6	9999
1100	79.6	78.6	94.0	107.3	78.9	30.6	81.5	9999
1200	79.6	79.0	93.9	108.0	78.9	30.8	81.5	9999
1300	79.6	79.5	94.1	108.9	79.0	31.4	81.4	9999
1400	81.0	79.8	94.3	107.6	79.0	31.4	81.3	9999
1500	81.9	80.2	93.9	103.2	72.0	31.4	81.0	9999
1600	81.4	80.2	94.5	99.0	78.9	31.7	81.3	9999
1700	81.3	80.5	95.0	98.0	78.9	31.7	81.0	9999
1800	81.2	80.5	95.7	97.5	78.9	31.6	81.5	9999
1900	81.0	80.4	95.3	100.1	79.0	31.5	81.6	9999
2000	81.0	80.3	94.9	106.8	79.0	31.4	81.6	9999
2100	80.7	80.0	94.5	108.7	79.0	31.4	81.2	9999
2200	80.1	79.2	92.8	107.5	78.6	30.5	80.4	9999
2300	80.0	79.2	93.6	107.2	78.6	30.5	80.0	9999
2400	79.9	78.8	92.1	106.0	78.6	30.0	80.0	9999

9999 OR 9999 -- INSTRUMENT MALFUNCTION

1079 074