NOAA Technical Memorandum ERL GLERL-3
(GLERL Contribution No. 32)

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Ann Arbor, Michigan
June 1975

UNITED STATES
DEPARTMENT OF COMMERCE
Rogers C.B. Morton, Secretary

NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
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Environmental Research
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5-0003
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George A. Leshkevich

Water temperature profiles for a longitudinal cross section of Lake Superior were collected aboard vessels operated by the United States Steel Corporation during the 1972-73 and 1973-74 winter seasons. Seven cruises were made during this period, four during the first winter season and three during the second. This information was collected as part of the Great Lakes Environmental Research Laboratory's participation in the program to examine the feasibility of an extended navigation season on the Great Lakes and the St. Lawrence Seaway.

The temperature profiles were made with a portable expendable bathythermograph system and were taken at 30-minute to 1-hour intervals, resulting in 24 to 45 measurements per cruise. Temperature profile data from the surface to a maximum depth of 200 m (656.16 ft) is presented in tabular form for each cast.

1. INTRODUCTION

This report presents water temperature profile data collected across Lake Superior as part of the Great Lakes Environmental Research Laboratory's[1] participation in the multi-year demonstration program to extend the navigation season on the Great Lakes and the St. Lawrence Seaway. Water temperature profiles were taken in the months of December, January, and February during the 1972-73 and 1973-74 winter seasons.

Temperature measurements were made using an expendable bathythermograph (XBT) system and were taken from ore carriers of the United States Steel Corporation's Great Lakes Fleet. This report describes the instrumentation and methods used in collecting the temperature profiles and presents an edited version of this data in tabular form.

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[1] In April 1974, the Limnology Division, Lake Survey Center, National Ocean Survey, was transferred to the Great Lakes Environmental Research Laboratory of the Environmental Research Laboratories. Reference is made to Lake Survey Center since this work was initiated and conducted under that organization.

2. DATA COLLECTION

2.1 Sampling Program

It was the express purpose of this program to collect water temperature data across Lake Superior beginning during the time of fall overturn and continuing for as long as possible thereafter. To reach this objective, a sampling program was initiated to take water temperature profile measurements across the lake at periodic intervals. These intervals were affected by weather conditions as well as ice conditions and ship schedules but in general were approximately 2 weeks in length.

Seven cruises were made during the two winter seasons (see table 1). A cruise, usually taking 2 or 3 days, is defined as the time period required for a vessel to transit the lake either in an eastward (downbound) direction from Duluth or Two Harbors, Minn., to the locks at Sault Ste. Marie, Mich., or westward (upbound) from the Soo locks to Two Harbors. The sequence of the XBT casts varied depending on whether one or two persons made the cruise (see table 2 for dates and locations of XBT casts). During the four cruises of the 1972-73 winter season, the casts were made consecutively on a 24-hour basis, while those of the 1973-74 winter season were made in two segments, half of them being taken upbound and half taken downbound, with an area of overlap abeam of the Keweenaw Peninsula. The cruises were made aboard commercial vessels following the Lake Carriers' Association's recommended shipping route (see figure 1). It should be noted, however, that the courses and subsequently the station sites are not the same for all cruises.

2.2 Equipment

The water temperature profiles were taken by means of a portable XBT system and were continuously recorded in degrees Celsius from the surface to the bottom or to a maximum depth of 200 m (656.16 ft) for each station. A Sippican Expendable Bathythermograph Recorder, model MK 2A-1, with a KOR 12 shallow water modification kit was used, coupled with a model LM 3-1 hand held launcher and Sippican T-10 XBT probes (see figure 2). Model MK 2A-1 has a temperature sensing range of -1.7°C to +35.5°C (28°F to 96°F), a temperature recording accuracy of $\pm$0.2°C ($\pm$0.4°F), and a depth recording accuracy of $\pm$2% or 4.57 m (15 ft), whichever is greater.

2.3 Methods

The recorder was set up at a 120 volt a.c. power supply near the stern of the ship in an area that would be maintained at temperatures above 0°C (32°F). A 15.24 m (50 ft) electrical cord connected the recorder to the hand held launcher and thus provided some flexibility of recorder location. The procedure for making a temperature profile

Table 1. Bathythermograph Cruises, 1972-73 Winter Season

Cruise No.	Date	Vessel	Number of Stations
1	20, 21 Dec. 1972	C. J. Callaway	44*
2	27, 28 Dec. 1972	P. R. Clarke	45*
3	15, 16 Jan. 1973	A. M. Anderson	30
4	31 Jan., 1 Feb. 1973	C. J. Callaway	28
	1973-74 Winter Season		
1	19, 20, 21 Dec. 1973	A. M. Anderson	31*
2	10, 11, 12 Jan. 1974	A. H. Ferbert	32*
3	22, 23 Jan. 1974	P. R. Clarke	24

*Due to malfunctioning probes, ice interference, or other factors, the actual number of stations with valid data differs slightly.

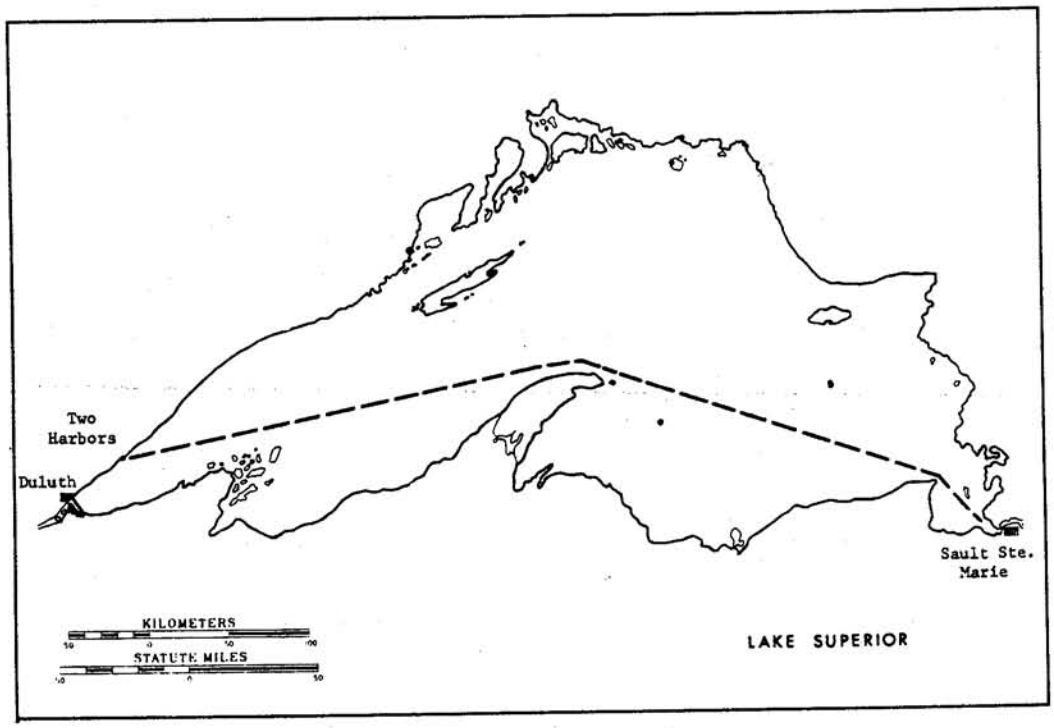


Figure 1. Lake Carriers' Association's recommended shipping route.

measurement consisted of loading an XBT canister into the hand held launcher, checking to see that the recorder calibrated at 16.7°C (62°F), taking the launcher to a convenient location on deck, and releasing the probe clear of the ship. When the release pin holding the probe in the canister is withdrawn, the probe falls from the canister and descends through the water unwinding a thin wire from the probe spool. The canister remains in the launcher with wire also unwinding from its spool. The two spools of wire, unwinding simultaneously, allow the wire to lie free in the water from the point of entry without being affected by the moving ship or the descending probe. The weighted nose of the XBT probe contains a temperature-sensitive thermistor, and the probe is spin-stabilized to assure a known velocity profile. A record of temperature in degrees Celsius and of depth in meters to a maximum depth of 200 m (656.16 ft) was continuously recorded as a graph on a calibrated paper chart for each cast (see figure 3).

Casts were made at 30-minute to 1-hour intervals, depending upon the detail desired for each cruise or portion of a cruise.

3. DATA REDUCTION AND PRESENTATION

3.1 Data Reduction

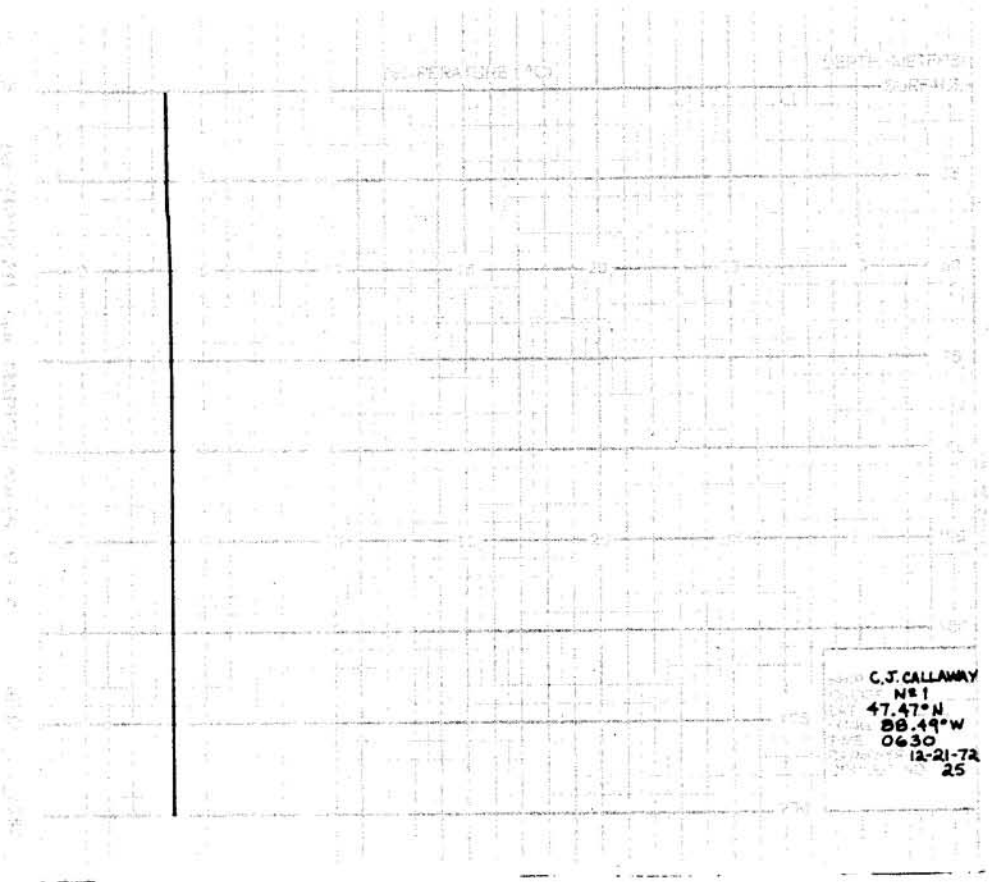
After each cruise the ship's course and the station sites were plotted on a lake chart using information recorded from the ship's log. The temperature-depth profile for each station was abstracted from the graph to a coding form along with the cruise number, station number, latitude and longitude to the nearest hundredth of a degree, maximum depth at the station to the nearest meter, and the date. The temperatures were recorded to the nearest tenth of a degree for each meter to a depth of 100 m (328.08 ft) and thereafter for each 10 m (32.81 ft) of depth to a maximum of 200 m (656.16 ft). The information on the coding forms was subsequently punched on computer cards.

3.2 Data Presentation

Because the data gathered during the seven cruises is too voluminous to reproduce in its entirety, only an edited version is presented in this report. A computer program was written to print temperature and depth only when the temperature changes by 0.1°C (≃ 0.2°F) or more in a 1-m depth increment for the first 100 m and in a 10-m depth increment for depths from 100 to 200 m. Table 2 presents this data in tabular form. At station 25 of Cruise 1, 1972, for example, the temperature at the surface was 3.5°C, (38.3°F), changed to 3.6°C, (38.5°F) at 41 m (134.51 ft) and remained at that temperature (see figure 3). In table 2 this data is presented as follows: surface temperature 3.5°C, change in temperature to 3.6°C at 41 m, temperature at the deepest reading, which at this station is 200 m, 3.6°C.

Figure 2. Bathythermograph recording equipment (photograph used with permission of the Sippican Corp., Marion, Massachusetts).

Figure 3. XBT chart for station 25, cruise 1, 1972 (chart used with permission of the Sippican Corp., Marion, Massachusetts).



4. ACKNOWLEDGMENTS

This work was carried out under the general guidance of Dr. Frank H. Quinn, Head of the Lake Hydrology Group, and Charles Adams, formerly of the Lake Hydrology Group, Great Lakes Environmental Research Laboratory. Funding was provided under the Great Lakes-St. Lawrence Seaway Navigation Season Extension Demonstration Program.

The cooperation and hospitality of the captains and crews of the ore carriers of the United States Steel Corporation's Great Lakes Fleet is gratefully acknowledged. A special note of thanks goes to Captain Rankin and his associates at United States Steel who often on short notice granted permission and made arrangements for members of our staff to ride vessels of the fleet across Lake Superior.

Table 2. Changes in Temperature at Bathythermograph Casts

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	1	46.45N	84.53W	18M	12/20/72

TEMPERATURE (C)	DEPTH (M)
.80	0
.90	6
.90	18

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	2	46.52N	84.62W	6M	12/20/72

TEMPERATURE (C)	DEPTH (M)
1.80	0
1.80	6

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	3	46.57N	84.71W	40M	12/20/72

TEMPERATURE (C)	DEPTH (M)
2.30	0
2.50	3
2.60	5
2.80	7
3.00	8
3.50	9
3.60	10
3.80	11
4.00	12
4.20	13
4.50	14
4.60	16
4.80	17
5.00	18
5.10	22
5.20	24
5.30	28
5.40	32
5.50	35
5.50	40

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	4	46.75N	84.85W	33M	12/20/72

TEMPERATURE (C)	DEPTH (M)
2.10	0
2.20	4
2.30	9
2.40	10
2.50	11
2.60	12
2.70	13
2.80	15
2.90	18
3.00	20
3.10	26
3.20	29
3.40	32
3.60	33

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	5	46.76N	84.92W	62M	12/20/72

TEMPERATURE (C)	DEPTH (M)
.80	0
.90	1
1.00	2
1.10	4
1.30	6
1.40	7
1.50	8
1.60	9
1.70	10
1.90	11
2.00	12
2.10	16
2.20	18
2.30	19
2.40	22
2.50	25
2.60	27
2.80	28
2.90	29
3.00	30
3.00	62

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	6	46.83N	85.10W	40M	12/20/72

TEMPERATURE (C)	DEPTH (M)
2.00	0
2.10	16
2.20	17
2.30	18
2.40	19
2.50	20
2.60	22
2.70	24
2.80	31
2.80	40

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	7	46.87N	85.25W	45M	12/20/72

TEMPERATURE (C)	DEPTH (M)
No data for station.	

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	8	46.92N	85.43W	97M	12/20/72

TEMPERATURE (C)	DEPTH (M)
3.40	0
3.50	11
3.50	97

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	9	46.97N	85.61W	150M	12/20/72

TEMPERATURE (C)	DEPTH (M)
4.00	0
4.00	150

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	10	47.02N	85.79W	178M	12/20/72

TEMPERATURE (C)	DEPTH (M)
4.00	0
4.10	33
4.20	34
4.30	36
4.40	37
4.50	38
4.60	39
4.70	40
4.80	43
4.90	44
5.00	45
5.30	46
5.50	47
5.60	48
5.50	62
5.30	70
5.20	79
5.10	86
5.00	91
4.90	120
4.80	130
4.70	150
4.60	160
4.60	178

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	11	47.06N	85.96W	200M	12/20/72

TEMPERATURE (C)	DEPTH (M)
4.00	0
4.00	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	12	47.10N	86.13W	200M	12/20/72

TEMPERATURE (C)	DEPTH (M)
4.10	0
4.20	28
4.30	36
4.20	96
4.20	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	13	47.15N	86.32W	144M	12/21/72

TEMPERATURE (C)	DEPTH (M)
4.10	0
4.20	43
4.30	46
4.40	47
4.50	48
4.60	49
4.70	50
4.80	52
4.90	54
5.00	55
4.90	92
4.80	110
4.70	130
4.70	138

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	14	47.20N	86.49W	218M	12/21/72

TEMPERATURE (C)	DEPTH (M)
4.10	0
4.20	50
4.20	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	15	47.24N	86.66W	233M	12/21/72

TEMPERATURE (C)	DEPTH (M)
4.00	0
4.10	16
4.20	45
4.30	78
4.30	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	16	47.28N	86.84W	237M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.70	0
3.80	190
3.90	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	17	47.33N	87.01W	252M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.70	0
3.80	60
3.90	180
3.90	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	18	47.38N	87.19W	273M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.60	0
3.70	75
3.70	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	19	47.42N	87.38W	204M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	95
3.70	160
3.70	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	20	47.46N	87.55W	120M	12/21/72

TEMPERATURE (C)	DEPTH (M)
1.70	0
1.80	8
2.00	9
2.30	13
2.50	14
2.60	15
2.80	16
3.00	17
3.20	18
3.30	19
3.40	20
3.50	24
3.50	120

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	21	47.50N	87.73W	100M	12/21/72

TEMPERATURE (C)	DEPTH (M)
1.20	0
1.30	5
1.40	8
1.50	12
1.60	15
1.70	17
1.80	20
1.90	24
2.00	29
2.10	48
2.20	49
2.30	52
2.40	53
2.50	55
2.60	62
2.70	68
2.80	77
2.90	82
3.00	85
3.00	100

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	22	47.52N	87.90W	110M	12/21/72

TEMPERATURE (C)	DEPTH (M)
.60	0
.70	7
.80	11
.90	12
1.00	13
1.20	14
1.30	15
1.50	16
1.60	17
1.70	18
1.80	19
2.00	20
2.10	22
2.20	23
2.30	25
2.40	26
2.50	27
2.60	30
2.70	33
2.90	34
3.00	35
3.10	46
3.20	47
3.30	50
3.40	54
3.50	60
3.60	67
3.70	69
3.80	70
3.90	76
4.00	91
4.00	110

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	23	47.51N	88.09W	170M	12/21/72

TEMPERATURE (C)	DEPTH (M)
.60	0
.70	9
.80	13
.90	17
1.00	18
1.30	19
1.40	20
1.50	22
1.60	23
1.70	24
1.80	25
1.90	26
2.00	27
2.10	30
2.20	32
2.30	33
2.40	34
2.50	38
2.60	41
2.70	43
2.80	44
3.00	48
3.10	51
3.20	53
3.30	57
3.40	65
3.50	89
3.50	170

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	24	47.49N	88.30W	236M	12/21/72

TEMPERATURE (C)	DEPTH (M)
2.80	0
2.90	8
3.00	9
3.10	18
3.20	22
3.30	23
3.40	24
3.50	25
3.60	32
3.70	34
3.80	35
3.90	38
4.00	40
3.90	77
3.80	86
3.70	110
3.70	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	25	47.47N	88.49W	229M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	41
3.60	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	26	47.44N	88.68W	210M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.60	0
3.70	51
3.80	180
3.90	190
4.10	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	27	47.43N	88.87W	150M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.60	0
3.70	73
3.70	150

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	28	47.41N	89.08W	140M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	31
3.70	32
3.80	46
3.90	51
4.00	54
4.10	59
4.20	61
4.30	63
4.40	65
4.50	76
4.60	81
4.70	84
4.80	85
4.90	89
5.00	95
5.10	120
5.20	130
5.30	140

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	29	47.41N	89.26W	185M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	51
3.70	88
3.80	150
3.90	170
4.10	180
4.20	185

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	30	47.39N	89.48W	160M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.60	0
3.70	54
3.70	160

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	31	47.37N	89.67W	175M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.60	0
3.70	110
3.80	160
4.00	170
4.00	175

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	32	47.35N	89.75W	160M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	36
3.70	71
3.70	160

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	33	47.33N	89.90W	127M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.20	0
3.30	11
3.40	96
3.50	127

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	34	47.31N	90.08W	125M	12/21/72

TEMPERATURE (C)	DEPTH (M)
3.10	0
3.20	68
3.30	110
3.30	125

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	35	47.27N	90.25W	107M	12/21/72

TEMPERATURE (C)	DEPTH (M)
2.90	0
3.00	36
3.10	81
3.10	107

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	36	47.21N	90.41W	85M	12/21/72

TEMPERATURE (C)	DEPTH (M)
2.60	0
2.70	57
2.70	85

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	37	47.17N	90.58W	50M	12/21/72

TEMPERATURE (C)	DEPTH (M)
2.40	0
2.40	50

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	38	47.13N	90.75W	38M	12/21/72

TEMPERATURE (C)	DEPTH (M)
1.80	0
1.90	29
2.00	31
2.10	33
2.20	34
2.20	38

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	39	47.08N	90.92W	43M	12/21/72

TEMPERATURE (C)	DEPTH (M)
1.00	0
1.10	21
1.20	22
1.30	23
1.40	24
1.50	25
1.60	26
1.70	27
1.80	29
1.90	31
2.00	34
2.10	38
2.30	39
2.30	43

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	40	47.05N	91.07W	86M	12/21/72

TEMPERATURE (C)	DEPTH (M)
2.60	0
2.70	44
2.80	65
2.90	76
3.00	84
3.00	86

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	41	47.08N	91.22W	102M	12/21/72

TEMPERATURE (C)	DEPTH (M)
2.70	0
2.80	33
2.90	37
3.00	41
3.10	51
3.20	65
3.30	68
3.40	75
3.50	78
3.60	83
3.80	84
4.00	85
4.00	102

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	42	46.96N	91.38W	102M	12/21/72

TEMPERATURE (C)	DEPTH (M)
2.50	0
2.60	31
2.70	34
2.80	46
2.90	48
3.00	50
3.10	52
3.20	54
3.30	66
3.40	67
3.50	68
3.60	69
3.70	73
3.80	99
3.80	102

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	43	46.91N	91.55W	102M	12/21/72

TEMPERATURE (C)	DEPTH (M)
2.20	0
2.30	18
2.40	28
2.50	34
2.60	36
2.70	45
2.80	48
2.90	53
3.00	55
3.10	58
3.20	59
3.30	60
3.40	63
3.50	70
3.60	74
3.70	76
3.80	78
4.00	84
4.00	102

Table 1. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	44	46.88N	91.70W	102M	12/21/72

TEMPERATURE (C)	DEPTH (M)
2.25	0
2.30	33
2.40	39
2.50	42
2.60	49
2.70	52
2.80	58
2.90	59
3.00	64
3.10	68
3.20	70
3.30	72
3.40	73
3.50	75
3.60	78
3.70	94
3.70	102

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	1	47.03N	91.62W	130M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.00	0
3.10	59
3.20	68
3.30	83
3.40	95
3.50	110
3.60	130

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	2	47.08N	91.37W	201M	12/27/72

TEMPERATURE (C)	DEPTH (M)
2.80	0
2.90	50
3.00	54
3.10	59
3.20	62
3.30	63
3.40	94
3.50	98
3.60	110
3.70	130
3.80	140
3.80	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	3	47.11N	91.20W	168M	12/27/72

TEMPERATURE (C)	DEPTH (M)
2.50	0
2.60	42
2.70	44
2.80	48
2.90	69
3.00	75
3.10	88
3.20	92
3.30	110
3.50	120
3.60	130
3.70	150
3.70	168

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	4	47.15N	91.03W	150M	12/27/72

TEMPERATURE (C)	DEPTH (M)
No data for station.	

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	5	47.16N	90.99W	147M	12/27/72

TEMPERATURE (C)	DEPTH (M)
2.50	0
2.60	55
2.70	62
2.80	66
2.90	90
3.00	94
3.30	110
3.40	120
3.50	130
3.50	147

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	6	47.19N	90.83W	104M	12/27/72

TEMPERATURE (C)	DEPTH (M)
2.30	0
2.40	41
2.50	49
2.60	81
2.70	83
2.80	87
2.80	104

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	7	47.23N	90.61W	65M	12/27/72

TEMPERATURE (C)	DEPTH (M)
2.00	0
2.10	26
2.20	33
2.30	37
2.40	45
2.50	55
2.50	65

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	8	47.24N	90.53W	77M	12/27/72

TEMPERATURE (C)	DEPTH (M)
2.10	0
2.20	32
2.30	36
2.40	47
2.50	57
2.60	67
2.70	71
2.70	77

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	9	47.28N	90.32W	110M	12/27/72

TEMPERATURE (C)	DEPTH (M)
2.50	0
2.60	53
2.70	61
2.80	63
2.90	71
3.00	91
3.00	110

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	10	47.30N	90.17W	125M	12/27/72

TEMPERATURE (C)	DEPTH (M)
2.70	0
2.80	36
2.90	66
3.00	75
3.10	91
3.20	96
3.30	110
3.40	120
3.40	125

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	11	47.32N	90.01W	137M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.00	0
3.10	81
3.20	90
3.30	100
3.40	110
3.60	130
3.70	137

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	12	47.35N	89.85W	166M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.10	0
3.20	31
3.30	51
3.40	76
3.50	130
3.60	160
3.60	166

Table 2. Changes in Temperature at bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	13	47.37N	89.68W	201M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.10	0
3.20	79
3.30	98
3.40	130
3.50	140
3.60	170
3.70	180
3.80	190
4.00	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	14	47.39N	89.51W	190M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.30	0
3.40	39
3.50	100
3.60	160
3.70	170
3.80	180
3.80	190

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	15	47.42N	89.35W	167M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.30	0
3.40	36
3.50	100
3.60	130
3.60	167

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	16	47.44N	89.13W	177M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.30	0
3.40	26
3.50	32
3.60	37
3.70	39
3.80	45
3.90	85
4.00	88
3.90	110
3.90	177

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	17	47.47N	88.98W	166M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.30	0
3.40	16
3.50	18
3.60	20
3.70	22
3.80	24
3.90	26
4.00	27
4.10	28
4.20	29
4.30	32
4.40	34
4.50	35
4.60	37
4.70	38
4.80	39
4.90	42
5.00	45
5.10	63
5.00	86
4.90	120
4.80	130
4.80	166

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	18	47.50N	88.83W	223M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.30	0
3.40	67
3.50	68
3.70	170
3.70	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	19	47.52N	88.66W	223M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	37
3.70	78
3.80	87
3.90	140
4.00	160
4.10	170
4.20	180
4.30	190
4.50	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	20	47.55N	88.49W	230M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	31
3.70	32
3.80	38
3.90	51
3.80	110
3.90	180
3.90	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	21	47.57N	88.33W	190M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.40	0
3.50	110
3.50	190

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	22	47.58N	88.11W	160M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.40	0
3.50	110
3.60	140
3.60	160

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	23	47.59N	87.93W	189M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.30	0
3.40	87
3.50	110
3.60	130
3.70	160
3.80	189

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	24	47.60N	87.78W	223M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.30	0
3.40	130
3.50	160
3.50	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	25	47.60N	87.63W	175M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.30	0
3.40	41
3.50	120
3.60	140
3.70	150
3.80	170
3.80	175

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	26	47.56N	87.48W	138M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.20	0
3.30	110
3.40	130
3.40	138

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	27	47.52N	87.33W	215M	12/27/72

TEMPERATURE (C)	DEPTH (M)
No data for station.	

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	28	47.51N	87.30W	293M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	51
3.70	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	29	47.47N	87.18W	311M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	110
3.70	140
3.80	170
4.00	180
4.00	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	30	47.43N	87.00W	316M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.60	0
3.70	33
3.80	170
4.00	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	31	47.39N	86.85W	307M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.80	0
3.80	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	32	47.36N	86.72W	245M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.90	0
4.00	30
4.10	50
4.20	65
4.20	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	33	47.27N	86.39W	115M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.30	0
3.40	34
3.50	35
3.60	38
3.70	41
3.80	47
3.90	49
3.60	53
3.60	115

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	34	47.23N	86.24W	193M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.90	0
4.00	110
4.20	180
4.30	190
4.40	193

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	35	47.18N	86.09W	201M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.90	0
4.00	75
4.00	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	36	47.13N	85.93W	184M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	35
3.70	110
3.80	180
3.80	184

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	37	47.09N	85.78W	173M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.80	0
3.90	70
4.00	120
4.40	160
4.50	170
4.50	173

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	38	47.04N	85.63W	167M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.80	0
4.00	120
4.10	160
4.10	167

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	39	46.99N	85.49W	200M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.60	0
3.70	11
3.80	38
4.00	91
4.00	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	40	46.95N	85.34W	207M	12/27/72

TEMPERATURE (C)	DEPTH (M)
3.80	0
3.90	150
4.00	160
4.00	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	41	46.91N	85.18W	82M	12/27/72

TEMPERATURE (C)	DEPTH (M)
2.90	0
2.80	23
2.80	82

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	42	46.88N	85.03W	67M	12/27/72

TEMPERATURE (C)	DEPTH (M)
2.10	0
2.20	31
2.30	32
2.40	34
2.50	35
2.40	42
2.30	43
2.40	57
2.50	59
2.60	63
2.70	66
2.70	67

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	43	46.79N	84.89W	63M	12/27/72

TEMPERATURE (C)	DEPTH (M)
1.70	0
1.80	21
1.90	36
2.00	43
2.10	48
2.20	53
2.30	54
2.40	56
2.50	57
2.60	59
2.70	60
2.70	63

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	44	46.68N	84.79W	46M	12/27/72

TEMPERATURE (C)	DEPTH (M)
2.10	0
2.20	33
2.30	41
2.30	46

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	45	46.58N	84.68W	48M	12/27/72

TEMPERATURE (C)	DEPTH (M)
1.90	0
1.90	48

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	1	46.57N	84.68W	38M	01/15/73

TEMPERATURE (C)	DEPTH (M)
.10	0
.30	23
.40	24
.50	28
.60	33
.80	34
1.00	35
1.10	36
1.20	37
1.20	38

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	2	46.67N	84.79W	138M	01/15/73

TEMPERATURE (C)	DEPTH (M)
.10	0
.20	26
.30	64
.40	68
.50	76
.60	78
.70	80
.80	82
.90	89
1.00	95
1.30	110
1.50	120
1.70	138

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	3	46.72N	84.87W	87M	01/15/73

TEMPERATURE (C)	DEPTH (M)
.10	0
.20	25
.30	51
.40	59
.50	66
.60	71
.70	73
.80	74
.90	77
1.00	78
1.00	87

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	4	46.82N	85.08W	200M	01/15/73

TEMPERATURE (C)	DEPTH (M)
.40	0
.50	21
.60	38
.70	56
.80	91
.90	160
.90	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	5	46.92N	85.41W	120M	01/15/73

TEMPERATURE (C)	DEPTH (M)
1.80	0
1.90	64
2.00	65
2.10	110
2.10	120

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	6	47.03N	85.75W	190M	01/15/73

TEMPERATURE (C)	DEPTH (M)
2.70	0
2.80	21
2.90	89
3.00	150
3.00	190

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	7	47.11N	86.06W	200M	01/15/73

TEMPERATURE (C)	DEPTH (M)
2.30	0
2.40	76
2.50	110
2.60	140
2.70	150
2.80	160
2.90	170
3.00	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	8	47.20N	86.42W	244M	01/15/73

TEMPERATURE (C)	DEPTH (M)
2.80	0
2.90	91
3.00	110
3.00	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	9	47.28N	86.75W	219M	01/15/73

TEMPERATURE (C)	DEPTH (M)
2.90	0
3.00	110
3.10	130
3.20	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	10	47.41N	87.04W	245M	01/16/73

TEMPERATURE (C)	DEPTH (M)
2.80	0
2.90	76
3.00	93
3.10	130
3.20	150
3.30	170
3.40	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	11	47.49N	87.36W	185M	01/16/73

TEMPERATURE (C)	DEPTH (M)
2.20	0
2.30	39
2.40	49
2.50	53
2.60	76
2.70	110
2.80	130
3.00	150
3.00	185

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	12	47.53N	87.55W	147M	01/16/73

TEMPERATURE (C)	DEPTH (M)
1.70	0
1.80	21
1.90	31
2.00	37
2.10	71
2.20	86
2.30	110
2.40	120
2.40	147

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	13	47.55N	87.72W	163M	01/16/73

TEMPERATURE (C)	DEPTH (M)
1.70	0
1.80	23
1.90	79
2.00	110
2.00	163

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	14	47.56N	87.87W	200M	01/16/73

TEMPERATURE (C)	DEPTH (M)
1.90	0
2.00	70
2.10	160
2.20	190
2.20	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	15	47.54N	88.04W	201M	01/16/73

TEMPERATURE (C)	DEPTH (M)
2.30	0
2.40	76
2.50	190
2.50	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	16	47.52N	88.20W	255M	01/16/73

TEMPERATURE (C)	DEPTH (M)
2.40	0
2.50	110
2.60	180
2.70	190
2.80	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	17	47.49N	88.36W	246M	01/16/73

TEMPERATURE (C)	DEPTH (M)
2.50	0
2.60	140
2.70	170
2.80	180
2.90	190
3.00	200

Table 7. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	18	47.45N	88.72W	190M	01/16/73

TEMPERATURE (C)	DEPTH (M)
2.40	0
2.50	86
2.60	98
2.70	110
2.80	120
2.90	130
3.00	140
3.10	150
3.20	170
3.30	190

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	19	47.41N	89.04W	180M	01/16/73

TEMPERATURE (C)	DEPTH (M)
2.30	0
2.40	96
2.50	97
2.60	110
2.70	130
2.90	140
3.10	150
3.20	160
3.30	180

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	20	47.36N	89.37W	190M	01/16/73

TEMPERATURE (C)	DEPTH (M)
2.10	0
2.20	71
2.30	78
2.40	84
2.50	86
2.60	91
2.70	92
2.80	93
2.90	99
3.00	100
3.20	110
3.30	140
3.30	190

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	21	47.33N	89.55W	180M	01/16/73

TEMPERATURE (C)	DEPTH (M)
2.00	0
2.10	61
2.20	63
2.30	68
2.40	72
2.50	74
2.60	82
2.70	85
2.80	88
2.90	89
3.00	90
3.20	91
3.30	92
3.40	93
3.50	99
3.50	180

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	22	47.31N	89.72W	180M	01/16/73

TEMPERATURE (C)	DEPTH (M)
1.90	0
2.00	51
2.10	69
2.20	70
2.30	74
2.50	75
2.60	77
2.70	79
2.80	81
2.90	87
3.00	89
3.10	110
3.20	140
3.20	180

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	23	47.29N	89.87W	160M	01/16/73

TEMPERATURE (C)	DEPTH (M)
1.60	0
1.70	50
1.80	54
1.90	57
2.00	60
2.10	62
2.20	63
2.30	64
2.50	65
2.70	67
2.80	68
2.90	81
3.00	96
3.00	160

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	24	47.27N	90.05W	140M	01/16/73

TEMPERATURE (C)	DEPTH (M)
1.80	0
1.90	48
2.00	55
2.10	57
2.20	58
2.30	60
2.40	64
2.50	67
2.60	74
2.70	75
2.80	77
2.90	80
3.00	81
3.10	88
3.20	89
3.30	96
3.30	140

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	25	47.25N	90.21W	110M	01/16/73

TEMPERATURE (C)	DEPTH (M)
1.40	0
1.50	24
1.60	25
1.70	32
1.80	34
1.90	39
2.00	47
2.10	51
2.20	52
2.30	53
2.40	63
2.50	70
2.60	72
2.70	74
2.80	76
2.90	85
3.00	96
3.00	110

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	26	47.23N	90.37W	82M	01/16/73

TEMPERATURE (C)	DEPTH (M)
1.30	0
1.40	53
1.50	54
1.60	56
1.70	58
1.80	59
1.90	60
2.00	61
2.20	64
2.30	65
2.40	67
2.50	76
2.50	82

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	27	47.21N	90.55W	62M	01/16/73

TEMPERATURE (C)	DEPTH (M)
1.90	0
1.90	62

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	28	47.18N	90.71W	200M	01/16/73

TEMPERATURE (C)	DEPTH (M)
1.60	0
1.00	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	29	47.13N	91.03W	140M	01/16/73

TEMPERATURE (C)	DEPTH (M)
1.20	0
1.30	56
1.50	57
1.80	58
1.90	59
2.00	61
2.20	66
2.30	68
2.40	70
2.50	74
2.60	85
2.70	86
2.80	96
3.00	120
3.10	130
3.20	140

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	30	47.07N	91.34W	268M	01/16/73

TEMPERATURE (C)	DEPTH (M)
2.00	0
2.10	37
2.20	38
2.30	43
2.40	51
2.50	53
2.60	54
2.70	56
2.80	58
2.90	60
3.00	66
3.10	76
3.20	120
3.30	180
3.40	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	1	47.04N	91.46W	238M	01/31/73

TEMPERATURE (C)	DEPTH (M)
.90	0
1.00	30
1.10	37
1.20	38
1.30	46
1.40	51
1.50	53
1.60	54
1.70	57
1.80	58
1.90	64
2.00	65
2.10	70
2.20	71
2.40	72
2.50	75
2.60	76
2.70	78
2.80	82
2.90	120
3.00	130
3.10	150
3.20	180
3.40	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	2	47.09N	91.12W	140M	01/31/73

TEMPERATURE (C)	DEPTH (M)
.20	0
.30	28
.40	38
.50	42
.60	47
.70	54
.80	56
.90	62
1.00	64
1.20	71
1.40	72
1.50	73
1.60	75
1.80	77
1.90	78
2.00	79
2.10	81
2.20	82
2.30	86
2.40	87
2.50	96
2.60	110
2.70	120
3.00	130
3.00	140

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	3	47.15N	90.77W	46M	01/31/73

TEMPERATURE (C)	DEPTH (M)
.20	0
.50	24
1.10	25
1.20	26
1.30	27
1.50	28
2.00	29
2.30	30
2.60	31
2.80	32
3.00	33
3.30	34
3.40	35
3.60	36
3.80	37
3.90	38
4.00	39
4.00	46

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	4	47.17N	90.60W	55M	01/31/73

TEMPERATURE (C)	DEPTH (M)
.20	0
.30	13
.40	16
.50	26
.60	27
.70	28
.80	29
.90	33
1.00	34
1.10	39
1.30	40
1.60	41
1.90	42
2.00	43
2.00	55

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	5	47.20N	90.43W	76M	01/31/73

TEMPERATURE (C)	DEPTH (M)
1.00	0
1.10	52
1.20	54
1.50	56
1.60	57
1.80	58
1.90	59
2.00	61
2.00	77

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	6	47.22N	90.25W	112M	01/31/73

TEMPERATURE (C)	DEPTH (M)
1.00	0
1.10	34
1.20	35
1.30	48
1.40	50
1.50	55
1.60	58
1.80	62
1.90	64
2.00	66
2.10	69
2.20	70
2.40	71
2.50	72
2.60	73
2.70	74
2.80	75
2.80	112

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	7	47.25N	90.07W	140M	01/31/73

TEMPERATURE (C)	DEPTH (M)
1.00	0
1.10	49
1.20	56
1.30	68
1.40	69
1.50	71
1.60	73
1.70	81
1.80	82
1.90	85
2.00	86
2.10	88
2.20	89
2.40	91
2.50	94
2.60	95
2.70	98
2.80	99
3.00	110
3.00	140

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	8	47.30N	89.73W	200M	01/31/73

TEMPERATURE (C)	DEPTH (M)
1.40	0
1.50	24
1.60	51
1.70	58
1.80	59
1.90	71
2.00	78
2.20	93
2.30	96
2.40	97
2.60	110
2.80	120
3.00	130
3.10	180
3.10	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	9	47.35N	89.38W	195M	01/31/73

TEMPERATURE (C)	DEPTH (M)
1.60	0
1.70	53
1.80	63
1.90	79
2.00	84
2.10	89
2.20	91
2.40	94
2.50	95
2.60	96
2.70	97
2.80	98
3.00	110
3.10	150
3.20	170
3.20	195

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	10	47.40N	89.07W	180M	01/31/73

TEMPERATURE (C)	DEPTH (M)
1.20	0
1.30	12
1.40	14
1.50	20
1.60	28
1.70	33
1.80	37
1.90	49
2.00	56
2.10	86
2.20	87
2.30	97
2.40	98
2.80	110
3.00	120
3.10	130
3.20	140
3.20	180

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	11	47.45N	88.75W	160M	01/31/73

TEMPERATURE (C)	DEPTH (M)
1.80	0
1.90	57
2.00	63
2.10	73
2.20	74
2.30	86
2.40	89
2.50	100
2.80	110
3.00	120
3.20	150
3.20	160

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	12	47.49N	88.46W	228M	02/01/73

TEMPERATURE (C)	DEPTH (M)
1.60	0
1.70	47
1.80	49
1.90	66
2.00	84
2.50	120
2.80	130
3.00	150
3.00	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	13	47.51N	88.30W	238M	02/01/73

TEMPERATURE (C)	DEPTH (M)
1.00	0
1.10	6
1.20	16
1.30	34
1.40	35
1.50	38
1.60	39
1.70	53
1.80	56
1.90	81
2.00	96
2.10	110
2.30	120
2.40	130
2.60	140
2.70	150
2.80	160
2.90	180
3.00	190
3.00	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	14	47.52N	88.13W	200M	02/01/73

TEMPERATURE (C)	DEPTH (M)
1.20	0
1.30	57
1.40	59
1.50	61
1.60	62
1.70	64
1.80	67
1.90	83
2.00	85
2.20	120
2.30	140
2.40	150
2.50	170
2.60	190
2.80	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	15	47.53N	87.97W	190M	02/01/73

TEMPERATURE (C)	DEPTH (M)
.80	0
.90	47
1.00	49
1.10	51
1.20	52
1.30	55
1.40	56
1.50	57
1.60	58
1.70	60
1.80	61
1.90	62
2.00	69
2.10	79
2.20	81
2.40	110
2.60	120
2.70	130
2.80	170
2.80	190

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	16	47.53N	87.82W	110M	02/01/73

TEMPERATURE (C)	DEPTH (M)
1.00	0
1.10	64
1.20	66
1.30	71
1.40	72
1.50	73
1.60	74
1.80	75
1.90	81
2.00	82
2.10	98
2.30	110

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	17	47.46N	87.47W	140M	02/01/73

TEMPERATURE (C)	DEPTH (M)
1.70	0
1.80	67
1.90	73
2.00	74
2.10	83
2.20	85
2.40	91
2.50	92
2.60	93
2.70	97
2.80	99
2.90	130
3.00	140

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	18	47.36N	87.13W	258M	02/01/73

TEMPERATURE (C)	DEPTH (M)
2.40	0
2.50	51
2.60	79
2.70	89
2.80	90
2.90	110
3.00	120
3.20	150
3.30	160
3.30	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	19	47.27N	86.80W	261M	02/01/73

TEMPERATURE (C)	DEPTH (M)
2.50	0
2.40	110
2.40	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	20	47.18N	86.46W	201M	02/01/73

TEMPERATURE (C)	DEPTH (M)
2.00	0
2.10	71
2.20	89
2.10	93
2.20	98
2.40	120
2.50	130
2.60	140
2.80	160
2.90	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	21	47.18N	86.13W	120M	02/01/73

TEMPERATURE (C)	DEPTH (M)
2.10	0
2.20	35
2.20	120

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	22	47.02N	86.83W	100M	02/01/73

TEMPERATURE (C)	DEPTH (M)
1.80	0
1.90	76
2.00	78
2.00	100

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	23	46.95N	86.52W	93M	02/01/73

TEMPERATURE (C)	DEPTH (M)
1.60	0
1.70	3
1.60	7
1.70	10
1.60	14
1.70	17
1.60	21
1.70	24
1.60	28
1.70	30
1.80	66
1.90	82
2.00	86
2.00	93

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	24	46.86N	85.20W	26M	02/01/73

TEMPERATURE (C)	DEPTH (M)
.20	0
.30	7
.40	13
.50	16
.60	21
.80	23
.80	26

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	25	46.80N	84.95W	55M	02/01/73

TEMPERATURE (C)	DEPTH (M)
0.00	0
.10	29
.20	34
.30	35
.40	37
.50	40
.60	45
.60	55

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	26	46.75N	84.91W	69M	02/01/73

TEMPERATURE (C)	DEPTH (M)
0.00	0
0.00	69

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	27	46.65N	84.80W	54M	02/01/73

TEMPERATURE (C)	DEPTH (M)
0.00	0
.10	33
.20	34
.30	44
.40	46
.50	51
.50	54

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	28	46.59N	84.74W	87M	02/01/73

TEMPERATURE (C)	DEPTH (M)
0.00	0
.10	59
.20	62
.30	74
.40	76
.50	79
.50	87

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	1	46.58N	84.75W	74M	12/19/73

TEMPERATURE (C)	DEPTH (M)
4.90	0
5.00	1
5.10	2
5.00	40
4.80	57
4.70	61
4.60	62
4.50	63
4.40	66
4.30	67
4.20	69
4.20	74

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	2	46.75N	84.90W	98M	12/19/73

TEMPERATURE (C)	DEPTH (M)
4.80	0
4.90	2
4.90	98

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	3	46.83N	85.12W	28M	12/19/73

TEMPERATURE (C)	DEPTH (M)
4.10	0
4.10	28

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	4	46.90N	85.38W	72M	12/19/73

TEMPERATURE (C)	DEPTH (M)
4.40	0
4.50	16
4.50	72

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	5	46.97N	85.63W	177M	12/19/73

TEMPERATURE (C)	DEPTH (M)
4.40	0
4.50	71
4.50	177

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	6	47.05M	85.92W	129M	12/19/73

TEMPERATURE (C)	DEPTH (M)
4.40	0
4.30	7
4.40	34
4.50	40
4.40	110
4.40	129

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	7	47.10N	86.15W	130M	12/19/73

TEMPERATURE (C)	DEPTH (M)
4.40	0
4.30	12
4.40	38
4.40	130

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	8	47.17N	86.40W	000M	12/19/73

TEMPERATURE (C)	DEPTH (M)
No data for station.	

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	9	47.22N	86.63W	233M	12/19/73

TEMPERATURE (C)	DEPTH (M)
4.30	0
4.30	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	10	47.28N	86.88W	258M	12/19/73

TEMPERATURE (C)	DEPTH (M)
3.90	0
4.00	43
4.00	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	11	47.35N	87.12W	282M	12/19/73

TEMPERATURE (C)	DEPTH (M)
3.90	0
4.00	1
4.00	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	12	47.40N	87.38W	175M	12/19/73

TEMPERATURE (C)	DEPTH (M)
3.80	0
3.80	175

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	13	47.45N	87.58W	135M	12/19/73

TEMPERATURE (C)	DEPTH (M)
3.80	0
3.70	6
3.80	18
3.80	135

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	14	47.52N	87.85W	138M	12/19/73

TEMPERATURE (C)	DEPTH (M)
3.70	0
3.80	18
3.80	138

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	15	47.48N	88.17W	225M	12/19/73

TEMPERATURE (C)	DEPTH (M)
3.60	0
3.70	20
3.80	140
3.80	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	16	47.47N	88.40W	240M	12/19/73

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	35
3.70	57
3.80	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	17	47.42N	88.65W	87M	12/19/73

TEMPERATURE (C)	DEPTH (M)
3.80	0
3.90	47
4.00	87

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	18	47.02N	91.63W	72M	12/20/73

TEMPERATURE (C)	DEPTH (M)
2.10	0
2.20	13
2.30	16
2.40	17
2.60	18
2.80	19
2.90	20
3.00	21
3.10	35
3.20	36
3.30	37
3.40	42
3.50	50
3.60	56
3.50	72

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	19	47.07N	91.40W	271M	12/20/73

TEMPERATURE (C)	DEPTH (M)
3.40	0
3.50	1
3.60	58
3.70	60
3.80	98
3.90	150
3.90	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	20	47.13N	91.15W	170M	12/20/73

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	56
3.70	68
3.70	170

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	21	47.17N	90.92W	156M	12/20/73

TEMPERATURE (C)	DEPTH (M)
3.40	0
3.50	60
3.60	80
3.70	99
3.70	156

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	22	47.22N	90.65W	000M	12/20/73

TEMPERATURE (C)	DEPTH (M)
No data for station.	

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	23	47.25N	90.42W	108M	12/20/73

TEMPERATURE (C)	DEPTH (M)
3.20	0
3.30	65
3.30	108

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	24	47.28N	90.15W	150M	12/20/73

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	17
3.80	18
3.70	130
3.70	150

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	25	47.32N	89.90W	174M	12/20/73

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	10
3.60	174

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	26	47.35N	89.65W	200M	12/20/73

TEMPERATURE (C)	DEPTH (M)
3.50	0
3.60	1
3.70	83
3.70	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	27	47.38N	89.40W	170M	12/20/73

TEMPERATURE (C)	DEPTH (M)
3.70	0
3.80	50
3.90	160
3.90	170

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	28	47.42N	89.15W	180M	12/20/73

TEMPERATURE (C)	DEPTH (M)
3.60	0
3.70	38
3.70	180

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	29	47.45N	88.90W	130M	12/20/73

TEMPERATURE (C)	DEPTH (M)
3.60	0
3.50	21
3.60	26
3.70	27
3.70	130

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	30	47.48N	88.65W	203M	12/20/73

TEMPERATURE (C)	DEPTH (M)
3.80	0
3.90	7
4.00	130
4.00	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
1	31	47.52N	88.40W	240M	12/20/73

TEMPERATURE (C)	DEPTH (M)
4.00	0
4.00	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	1	47.48N	87.67W	81M	01/10/74

TEMPERATURE (C)	DEPTH (M)
1.10	0
1.10	81

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	2	47.53N	87.90W	129M	01/10/74

TEMPERATURE (C)	DEPTH (M)
2.00	0
2.10	67
2.20	93
2.30	100
2.30	129

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	3	47.52N	88.13W	186M	01/10/74

TEMPERATURE (C)	DEPTH (M)
2.30	0
2.40	20
2.50	65
2.50	186

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	4	47.47N	88.35W	251M	01/10/74

TEMPERATURE (C)	DEPTH (M)
2.80	0
2.90	29
3.00	69
3.10	110
3.20	160
3.30	180
3.40	190
3.50	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	5	47.45N	88.58W	210M	01/10/74

TEMPERATURE (C)	DEPTH (M)
2.70	0
2.80	34
2.90	44
3.00	55
3.10	94
3.30	140
3.40	150
3.50	160
3.60	170
3.60	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	6	47.40N	88.80W	158M	01/10/74

TEMPERATURE (C)	DEPTH (M)
2.50	0
2.60	40
2.70	44
2.80	54
2.90	69
3.00	78
3.10	120
3.20	130
3.30	150
3.30	158

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	7	47.38N	89.05W	179M	01/10/74

TEMPERATURE (C)	DEPTH (M)
2.20	0
2.30	24
2.40	29
2.50	46
2.60	52
2.70	54
2.80	91
2.90	92
3.00	120
3.10	140
3.40	150
3.50	160
3.50	179

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	8	47.35N	89.27W	182M	01/10/74

TEMPERATURE (C)	DEPTH (M)
2.30	0
2.40	29
2.50	36
2.60	42
2.70	44
2.80	49
2.90	76
3.00	97
3.10	130
3.20	140
3.50	150
3.60	160
3.60	182

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	9	47.32N	89.50W	000M	01/10/74

TEMPERATURE (C)	DEPTH (M)
No data for station.	

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	10	47.28N	89.73W	190M	01/10/74

TEMPERATURE (C)	DEPTH (M)
2.10	0
2.20	9
2.30	24
2.40	34
2.50	42
2.60	46
2.70	60
2.80	76
2.90	90
3.00	100
3.10	110
3.20	120
3.40	130
3.60	140
3.60	190

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	11	47.25N	89.95W	160M	01/10/74

TEMPERATURE (C)	DEPTH (M)
1.80	0
1.90	40
2.00	52
2.10	56
2.20	58
2.30	62
2.40	66
2.50	70
2.60	76
2.70	78
2.80	80
2.90	86
3.00	90
3.10	96
3.20	99
3.40	110
3.50	120
3.60	130
3.60	160

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	12	47.22N	90.18W	120M	01/10/74

TEMPERATURE (C)	DEPTH (M)
1.50	0
1.60	10
1.70	32
1.80	36
1.90	42
2.00	45
2.10	51
2.20	53
2.30	57
2.40	59
2.50	61
2.60	64
2.70	66
2.80	68
2.90	69
3.00	71
3.10	79
3.20	81
3.30	82
3.40	83
3.40	120

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	13	47.18N	90.45W	72M	01/10/74

TEMPERATURE (C)	DEPTH (M)
.60	0
.70	3
.80	7
.90	9
1.00	11
1.10	21
1.20	22
1.30	24
1.40	25
1.50	31
1.60	33
1.70	39
1.80	44
1.80	72

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	14	47.15N	90.63W	51M	01/10/74

TEMPERATURE (C)	DEPTH (M)
.70	0
.80	2
.90	3
1.00	6
1.10	12
1.20	25
1.30	26
1.40	27
1.50	28
1.60	41
1.70	42
1.80	44
1.80	51

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	15	47.12N	90.88W	118M	01/10/74

TEMPERATURE (C)	DEPTH (M)
1.40	0
1.50	6
1.60	13
1.70	15
1.80	25
1.90	36
2.00	49
2.10	58
2.20	66
2.30	72
2.40	76
2.50	77
2.60	86
2.70	88
2.80	89
3.00	90
3.10	92
3.20	94
3.30	95
3.40	97
3.50	99
3.60	110
3.60	118

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	16	47.08N	91.17W	168M	01/10/74

TEMPERATURE (C)	DEPTH (M)
1.50	0
1.60	2
1.70	14
1.80	15
1.90	22
2.00	24
2.10	26
2.20	29
2.30	31
2.40	33
2.50	35
2.60	37
2.70	38
2.80	44
2.90	45
3.00	46
3.10	54
3.20	59
3.30	64
3.40	69
3.50	80
3.60	99
3.80	110
3.60	168

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	17	47.03N	91.47W	254M	01/10/74

TEMPERATURE (C)	DEPTH (M)
2.20	0
2.30	14
2.40	18
2.50	24
2.60	28
2.70	29
2.80	32
2.90	34
3.00	36
3.10	42
3.20	46
3.30	60
3.40	72
3.50	90
3.60	110
3.70	120
3.60	180
3.70	190
3.60	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	18	47.53N	87.57W	152M	01/11/74

TEMPERATURE (C)	DEPTH (M)
2.10	0
2.20	17
2.30	18
2.40	19
2.50	20
2.60	21
2.70	23
2.80	25
2.90	30
3.00	65
3.00	152

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	19	47.48N	87.37W	182M	01/11/74

TEMPERATURE (C)	DEPTH (M)
2.30	0
2.40	32
2.50	40
2.60	47
2.70	62
2.80	75
2.90	88
3.00	99
3.10	110
3.30	130
3.50	140
3.60	150
3.60	182

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	20	47.43N	87.17W	185M	01/11/74

TEMPERATURE (C)	DEPTH (M)
2.90	0
3.00	57
3.10	65
3.20	72
3.30	80
3.40	94
3.50	150
3.60	170
3.60	185

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	21	47.37N	86.95W	315M	01/11/74

TEMPERATURE (C)	DEPTH (M)
2.70	0
2.80	58
2.90	61
3.00	65
3.10	71
3.20	72
3.30	120
3.40	140
3.50	170
3.50	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	22	47.32N	86.75W	240M	01/11/74

TEMPERATURE (C)	DEPTH (M)
2.90	0
3.00	40
3.10	75
3.20	110
3.30	150
3.40	190
3.40	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	23	47.27N	86.53W	258M	01/12/74

TEMPERATURE (C)	DEPTH (M)
2.90	0
3.00	50
3.10	57
3.20	58
3.30	86
3.40	110
3.40	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	24	47.20N	86.33W	178M	01/12/74

TEMPERATURE (C)	DEPTH (M)
3.40	0
3.50	140
3.60	160
3.60	178

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	25	47.15N	86.15W	126M	01/12/74

TEMPERATURE (C)	DEPTH (M)
3.10	0
3.20	62
3.30	78
3.40	86
3.50	126

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	26	47.08N	85.93W	90M	01/12/74

TEMPERATURE (C)	DEPTH (M)
3.20	0
3.30	69
3.40	80
3.40	90

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	27	47.03N	85.73W	193M	01/12/74

TEMPERATURE (C)	DEPTH (M)
3.40	0
3.50	89
3.60	120
3.60	193

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	28	46.97N	85.52W	115M	01/12/74

TEMPERATURE (C)	DEPTH (M)
2.80	0
2.90	21
3.00	23
3.10	31
3.20	32
3.30	33
3.40	40
3.50	55
3.60	71
3.60	115

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	29	46.92N	85.32W	73M	01/12/74

TEMPERATURE (C)	DEPTH (M)
2.20	0
2.30	44
2.40	57
2.40	73

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	30	46.85N	85.12W	58M	01/12/74

TEMPERATURE (C)	DEPTH (M)
1.20	0
1.30	5
1.40	7
1.50	9
1.60	10
1.70	29
1.80	37
1.90	38
2.00	40
2.10	41
2.20	42
2.30	43
2.40	44
2.50	46
2.40	48
2.30	51
2.40	58

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	31	46.77N	84.90W	64M	01/12/74

TEMPERATURE (C)	DEPTH (M)
.60	0
.70	5
.80	20
.90	52
1.10	57
1.20	58
1.50	59
1.60	60
1.90	61
2.00	62
2.10	63
2.10	64

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
2	32	46.67N	84.77W	44M	01/12/74

TEMPERATURE (C)	DEPTH (M)
.50	0
.60	20
.70	21
.80	28
.90	31
1.00	33
1.10	34
1.20	35
1.30	36
1.50	37
1.60	38
1.70	39
1.80	41
2.00	42
2.10	43
2.10	44

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	1	46.63N	84.77W	55M	01/22/74

TEMPERATURE (C)	DEPTH (M)
.20	0
.30	36
.40	40
.50	42
.60	43
.70	46
.80	48
.90	49
1.00	50
1.10	51
1.50	52
1.80	53
2.20	54
2.30	55

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	2	46.78N	84.90W	39M	01/22/74

TEMPERATURE (C)	DEPTH (M)
.30	0
.40	17
.50	20
.70	21
.60	22
.70	24
.80	29
.90	33
1.00	36
1.30	38
1.40	39

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	3	46.83N	85.00W	69M	01/22/74

TEMPERATURE (C)	DEPTH (M)
.50	0
.60	62
.70	67
.80	68
.90	69

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	4	47.02N	85.69W	154M	01/22/74

TEMPERATURE (C)	DEPTH (M)
2.70	0
2.80	24
2.90	29
3.00	54
3.00	154

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	5	47.30N	86.78W	223M	01/22/74

TEMPERATURE (C)	DEPTH (M)
2.50	0
2.60	3
2.70	51
2.80	105
2.90	108
3.00	110
3.10	117
3.20	125
3.30	134
3.40	150
3.50	153
3.60	166
3.60	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	6	47.38N	87.13W	197M	01/22/74

TEMPERATURE (C)	DEPTH (M)
3.00	0
3.10	116
3.20	131
3.30	169
3.40	179
3.50	189
3.60	190
3.70	192
3.80	194
3.90	196
4.00	197

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	7	47.48N	87.48W	154M	01/22/74

TEMPERATURE (C)	DEPTH (M)
2.20	0
2.30	57
2.40	73
2.50	80
2.60	83
2.70	85
2.80	87
2.90	88
3.00	105
3.00	154

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	8	47.53N	87.81W	147M	01/22/74

TEMPERATURE (C)	DEPTH (M)
.80	0
.90	53
1.00	59
1.10	61
1.20	62
1.30	65
1.40	68
1.50	70
1.60	71
1.70	83
1.80	88
1.90	102
2.00	103
2.10	143
2.20	147

Table 3. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	9	47.52N	88.23W	168M	01/22/74

TEMPERATURE (C)	DEPTH (M)
1.30	0
1.40	33
1.50	34
1.60	35
1.70	36
1.80	40
1.90	54
2.00	65
2.10	87
2.20	89
2.30	91
2.40	93
2.50	95
2.60	97
2.70	98
2.80	99
3.00	105
3.10	107
3.20	111
3.30	118
3.40	122
3.50	123
3.60	126
3.70	129
3.70	168

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	10	47.47N	88.57W	216M	01/22/74

TEMPERATURE (C)	DEPTH (M)
1.40	0
1.50	36
1.60	45
1.70	60
1.80	62
1.90	66
2.00	67
2.10	72
2.20	75
2.30	78
2.40	87
2.50	89
2.60	90
2.70	92
2.80	94
2.90	95
3.00	104
3.10	115
3.20	128
3.30	129
3.40	136
3.50	146
3.60	155
3.70	156
3.70	200

Table 3. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	11	46.98N	91.65W	65M	01/23/74

TEMPERATURE (C)	DEPTH (M)
1.10	0
1.20	6
1.30	12
1.40	15
1.50	30
1.60	32
1.70	37
1.80	40
1.90	45
2.00	65

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	12	47.07N	91.33W	192M	01/23/74

TEMPERATURE (C)	DEPTH (M)
	0
.40	20
.50	21
.60	22
.80	23
.90	24
1.00	25
1.20	26
1.30	28
1.40	29
1.50	30
1.60	32
1.70	34
1.80	35
1.90	37
2.00	43
2.10	62
2.30	65
2.40	66
2.50	67
2.60	69
2.70	72
2.80	74
2.90	80
3.00	84
3.10	88
3.20	95
3.30	98
3.40	110
3.50	120
3.60	130
3.70	160
3.80	180
4.10	190
4.20	192
4.20	

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	13	47.15N	91.02W	145M	01/23/74

TEMPERATURE (C)	DEPTH (M)
.40	0
.50	23
.60	24
.70	25
.50	30
.80	31
.90	32
1.00	33
1.10	34
1.20	35
1.30	37
1.40	40
1.50	42
1.60	43
1.70	44
1.80	46
1.90	47
2.00	48
2.10	53
2.20	55
2.30	57
2.40	58
2.50	59
2.60	73
2.70	74
2.80	80
2.90	81
3.00	82
3.10	92
3.20	96
3.30	100
3.40	110
3.50	120
3.50	145

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	14	47.23N	90.65W	55M	01/23/74

TEMPERATURE (C)	DEPTH (M)
.30	0
.40	15
.50	50
.80	51
1.00	52
1.20	53
1.50	54
1.60	55

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	15	47.27N	90.32W	108M	01/23/74

TEMPERATURE (C)	DEPTH (M)
.40	0
.50	26
.60	36
.70	40
.80	45
.90	52
1.00	56
2.00	64
3.00	75
3.50	77
3.50	108

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	16	47.32N	89.98W	141M	01/23/74

TEMPERATURE (C)	DEPTH (M)
.50	0
.60	13
.70	44
.80	47
.90	52
1.00	53
1.10	57
1.20	60
1.50	63
1.80	65
2.00	67
2.50	69
2.70	70
3.00	75
3.30	80
3.50	84
3.60	85
3.70	90
3.80	93
3.80	141

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	17	47.37N	89.63W	196M	01/23/74

TEMPERATURE (C)	DEPTH (M)
	0
.90	55
1.00	60
1.30	64
2.00	67
2.50	70
2.70	75
2.80	85
2.90	94
3.00	112
3.10	120
3.20	130
3.30	132
3.40	134
3.50	138
3.60	196
3.60	

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	18	47.42N	89.25W	158M	01/23/74

TEMPERATURE (C)	DEPTH (M)
1.60	0
1.70	51
1.80	55
2.00	58
2.40	65
3.00	68
3.10	70
3.20	75
3.30	80
3.40	85
3.50	126
3.60	131
3.60	158

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	19	47.45N	88.95W	131M	01/23/74

TEMPERATURE (C)	DEPTH (M)
1.90	0
2.00	80
2.50	88
2.70	90
3.00	96
3.40	100
3.50	105
3.60	109
3.60	131

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	20	47.50N	88.60W	210M	01/23/74

TEMPERATURE (C)	DEPTH (M)
1.60	0
1.70	23
1.80	58
1.90	76
2.00	91
2.40	97
2.70	102
2.90	104
3.40	112
3.60	117
3.70	122
3.80	132
3.80	200

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	21	47.55N	88.27W	246M	01/23/74

TEMPERATURE (C)	DEPTH (M)
	0
1.80	62
1.90	73
2.00	80
2.10	81
2.20	88
2.30	91
2.40	96
2.50	100
2.60	110
3.00	120
3.20	140
3.50	150
3.60	160
3.70	200
3.70	

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	22	47.22N	86.42W	153M	01/23/74

TEMPERATURE (C)	DEPTH (M)
	0
2.50	33
2.60	52
2.70	74
2.80	90
2.90	93
3.00	100
3.10	120
3.20	140
3.30	150
3.40	153
3.40	

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	23	47.12N	86.07W	193M	01/23/74

TEMPERATURE (C)	DEPTH (M)
	0
2.70	47
2.80	70
2.90	160
3.00	193
3.00	

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	24	46.92N	85.35W	67M	01/23/74

TEMPERATURE (C)	DEPTH (M)
	0
1.00	10
1.10	20
1.20	21
1.30	22
1.50	23
1.60	25
1.70	34
1.80	35
1.90	37
2.00	45
2.10	57
2.20	67
2.20	

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