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LAKE SUPERIOR BATHYTHERMOGRAPH DATA

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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.

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	47.2e.N	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	252Y	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

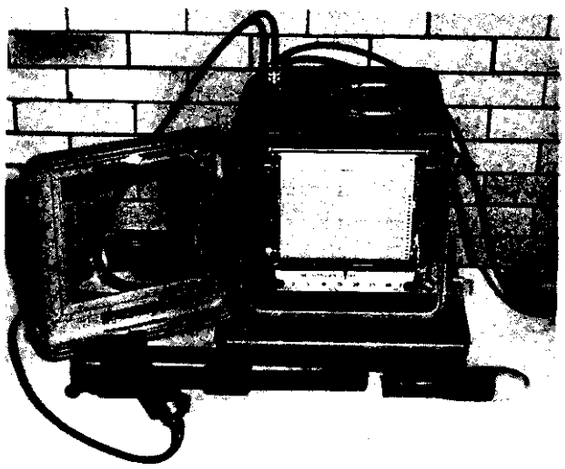

Figure 2. Bathythermograph recording equipment (photograph used with permission of the Sippican Corp., Marion, Massachusetts).

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

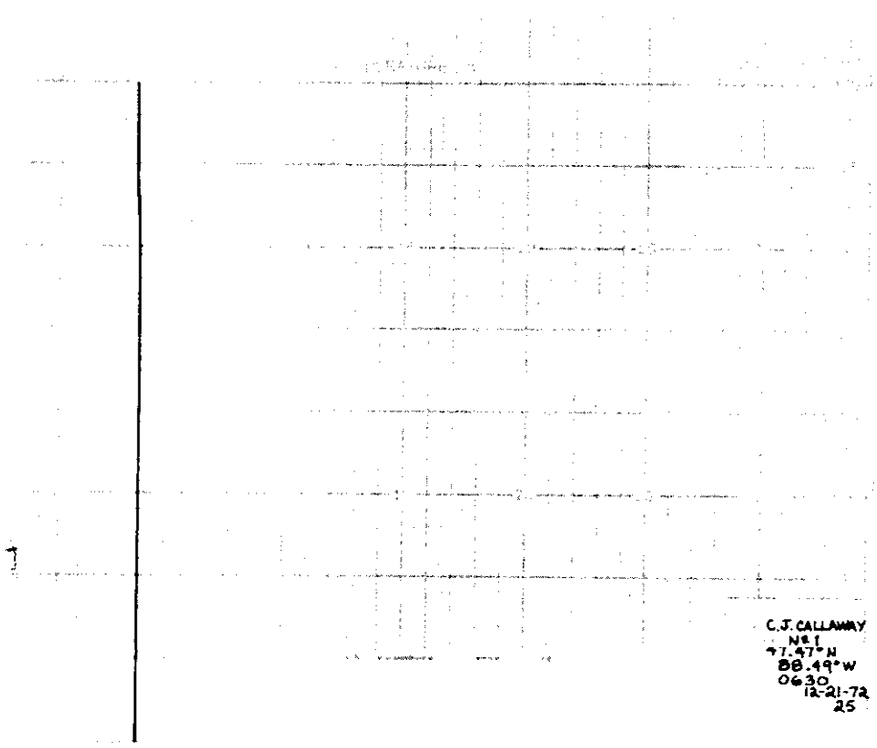

Table 2. Changes in Temperature at Bathythermograph Casts (continued)

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	6
3.70	71
3.70	160

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	85.251	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	85.791	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
[illegible]	
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	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	7s
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
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	1b
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
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	89.511	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
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.	HA".	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	a4
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	a5
4.00	102

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	86.391	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	49
3.90	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	5	47.16N	90.991	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	a	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
3	4	46.82N	85.08W	200M	01/15/73

TEMPERATURE (C)	DEPTH (M)
.40	0
.50	21
.bO	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 ICI	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	1	47.11N	86.0611	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
2	21	47.57N	88.33W	190H	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
-3	21	47.33N	89.551	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	a9
3.00	90
3.20	91
3.30	92
3.40	93
3.50	99
3.50	1 8 0

CRUISE	STA.NO.	LAT.	LONG.	MAX.DEPTH	DATE
3	22	47.31N	89.721	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	7 7
2.70	79
2.80	8 1
2.90	a7
3.00	a9
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
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	04.791	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
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	07
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
3	13	47.55N	87.721	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	200"	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	88.201	2551	01/16/73

TEMPERATURE (C)	DEPTH (M)
2.40	0
2.50	110
2.60	1.90
2.70	190
2.80	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	17	47.49N	88.361	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 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
	98
2.40 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
1.5[illegible]	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
3	25	47.25N	90.21W	110M	01/16/73

TEMPERATURE (C)	DEPTH (M)
1.40	0
1.50	24
1.bO	25
1.70	32
1.80	34
1.90	39
2.oo	47
2.10	51
2.20	52
2.30	53
2.40	63
2.50	70
2.bO	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	90.371	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)
1.00	0
1.00	200

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	29
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)
	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	6	47.22N	90.251	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	53
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	7[illegible]
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
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
4	15	47.53N	87.97W	190M	02/01/73

TEMPERATURE (C)	DEPTH (M)
.80	0
.90	47
1.00	49
	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
2.60	190

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
4	lb	47.53N	07.021	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)	OEPT" (M)
1.70	0
1.80	67
1.90	73
2.00	14
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
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	"ATE
2	2	47.53N	87.901	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	88.351	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	210H	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 Bathythenograph Casts (continued)

CRUISE	STA.NO.	LAT.	LONG.	WAX. 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	46.75~	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
6.10	28

CRUISE	STA.NO.	LAT.	LONG.	"AA. 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
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	Ib	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
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	1.40

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

CRUISE	STA.NO.	LPT.	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. DFPTH	DATF
2	30	46.85N	85.12W	58M	01112174

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)
.bO	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 Or,
.50	0
.bO	20
.70	21
.80	28
.90	31
1.oo	33
1.10	34
1.20	35
1.30	36
1.50	37
1.bO	38
1.70	39
1.80	41
2.oo	42
2.10	43
2.10	44

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

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

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	1b	47.32N	89.98W	141M	01/23/74

TEMPERATURE (C)	DEPTH (M)
.50	^
.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.	"AX. DEPTH	DATE
3	17	47.37N	89.63W	196M	01/23/74

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

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)
1.80	0
1.90	2
2.00	73
2.10	80
2.20	1
	88
2.30	91
2.50	6
2.60	100
3.00	0
3.20	120
3.50	140
3.60	150
3.70	0
3.70	200

CRUISE	STA.NO.	LAT.	LONG.	MAX. DEPTH	DATE
3	22	47.22N	86.421	153M	01/23/74

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

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

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

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

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