

**FISHERIES RESEARCH BOARD
OF CANADA**

MANUSCRIPT REPORTS OF THE BIOLOGICAL STATIONS

No.

458

Title

Pacific Coast Data Record
Offshore Survey
August 1 - 14, 1951

Author

Pacific Oceanographic Group

1952

FISHERIES RESEARCH BOARD
OF CANADA

MANUSCRIPT REPORTS OF THE BIOLOGICAL STATIONS
HOWARD SMITH

BELL-EAST BOND

No.



Pacific Coast Data Record
Ottawa Survey
August 1 - 14, 1951

Author

Biological Stationary Office

1952

PACIFIC OCEANOGRAPHIC GROUP

Nanaimo, B.C.

PACIFIC COAST DATA RECORD

OFFSHORE SURVEY

August 1 - 14, 1951.

Data Record, Offshore Survey, Cruise II-51.

August 1 - 14, 1951.

Introduction

Purpose

Offshore Cruise II-51, in H.M.C.S. Cedarwood, was undertaken primarily as a synoptic survey of the "offshore" area, and the following record presents the data obtained in this survey. Since this occupied only one-half of the round trip from the R.C.N. Dockyard at Esquimalt to Dixon Entrance and return, the other half was used for a survey of the region on, and adjacent to, the continental shelf. The data from this part of the cruise will be presented separately as coastal data.

Stations were also occupied in Juan de Fuca Strait and Dixon Entrance. The data from these stations are filed and will be presented along with other data from their respective areas.

Plan of Cruise (see chart)

- (a) Coastal Survey (data not included herewith).

Proceeding from Esquimalt, stations were occupied in the following order:

Juan de Fuca Stations J1 - J3.	July 17-18.
Shelf Stations S1 - S17.	July 18-19.
Anchor Station S17, Casts A - P.	July 19-21.
Shelf Stations S18 - S58.	July 21-26.
Dixon Entrance Stations Dix1 - Dix6.	July 26-27.

- (b) Lay-over in Ketchikan, Alaska, and Prince Rupert, B.C. July 27-31.

- (c) Offshore Survey.

Proceeding from Prince Rupert stations were occupied in the following order:

Dixon Entrance Stations Dix7 - Dix13.	July 31-August 1.
Offshore Lines G to A (data presented herewith).	August 1-14.
Juan de Fuca Stations J3 - J1.	August 14.

Personnel and Contribution

Wolfenden, J.E., Lieut. Cdr., R.C.N. Commanding Officer, H.M.C.S. Cedarwood.

Scientific staff at sea:

Doe, L.A.E., Assistant Scientist	(in charge August 6).
Shand, J.A., " "	(in charge August 7-14).
Herlineaux, R.H., Assistant Technician.	
Morgan, W.W., " "	

Scientific staff at sea:

Stickland, J.A., Assistant Technician.
Palmer, F.E., " "

Laboratory staff (titrations and calculations)

Harper, Miss E.L., Technician (in charge)
Morgan, W.W., Assistant Technician.
Robson, N.J., " "
Stickland, J.A., " "
Palmer, F.E., " "

Procedure and Equipment, Offshore Survey.

Stations were spaced approximately 40 miles apart and were occupied at intervals of six hours. This procedure had been adopted on Cruise I-51 to facilitate the elimination of tidal effects (Defant, 1950) but did not prove to be useful for this purpose. It was continued on this cruise because of its incidental advantages in maintaining a daily routine. The ship was stopped and a serial cast commenced at 0300, 0900, 1500 and 2100 hours daily, and speed was adjusted between stations to reach the next station at the appointed time. In the event that the distance had not been covered at the prescribed time, the ship was stopped and a cast made regardless of position, with the result that the distance between stations varied slightly. A bathythermograph cast was made immediately preceding and immediately following each serial cast, and also at 0600, 1200, 1800, and 2400 hours daily.

Water samples were stored in eight-ounce medicine bottles stoppered with waxed corks. The cork was then sealed in place by dipping the neck of the bottle in melted paraffin wax. Titrations for salinity by the Knudsen method were done in the base laboratory at the Pacific Biological Station, Nanaimo, B.C.

Since only one unprotected thermometer was available it was not considered feasible to interpolate depths in the case of large wire angles. Consequently an attempt was made to hold the line vertical during the entire "soaking time" and time of messenger descent at each station. This is not easy in a single screw vessel under any but the calmest conditions, and the officers of H.M.C.S. Cedarwood are to be congratulated on the measure of success they achieved. In this data record only observed values of temperature and salinity have been presented.

Samples were taken at depths of 0, 10, 20, 30, 40, 50, 75, 100, 125, 150, 200, 300, 400, 600, 800, 1000, 1200 metres. At station C7 the sounding wire became badly kinked and depths thereafter had to be reduced to 900 metres. The deeper samples from station C8 to the end of the survey were taken at 400, 500, 700, 900 metres.

Night fishing with dip-net and light was carried on whenever possible. Specimens were preserved and transmitted to the Pacific Biological Station for identification.

Owing to the requirements of other operations concurrently at sea, a rather heterogeneous collection of sampling bottles was used. These included:

1 Fjarlie Mk. 1
4 " Mk. 2
5 " Mk. 3
6 Nansen

Each type had its own merits and disadvantages. The Nansen bottles had a slight tendency to leak since adequate tightening of the valve tended to make them stick. Some also appear to have pre-tripped. The Fjarlie bottles, Mark 1 and 2, it is believed, occasionally released the messenger prematurely, thus invalidating all the samples and temperatures below the offending bottle. In most cases this was not discovered until the samples had been titrated and hence a second cast was not made. In these cases, (e.g. station G6) only the accepted values have been listed here.

The Fjarlie bottles, Mark 3, were placed in service for the first time and were judged to be of very promising design. They appeared to combine convenience of handling and excellent flushing characteristics, and with certain minor modifications which have since been incorporated promised to be reliable in all respects.

The leaks observed appeared to occur only in air after the bottles were recovered and were all of a very small magnitude and in no case were observed in both ends of the bottle at the same time. It is considered unlikely that any contamination occurred from this cause.

Twenty-eight Reversing Thermometers were used, including:

15 protected, manufactured by Richter and Wiese.
12 " " " Negretti and Zambra.
1 unprotected " " Richter and Wiese.

Summary of Log (Offshore Survey only)

Tuesday, July 31:

1230 Left Prince Rupert. Watches established as follows:

(a) Herlinveaux and Morgan 2400 - 0800
(b) Doe and Palmer 0800 - 1600
(c) Shand and Stickland 1600 - 2400

Stations Dix7 - Dix10.

Weather, cloudy, wind light, sea calm.

Wednesday, August 1:

Stations Dix11 - Dix13, G1 - G3.

Weather, overcast, wind light, sea moderate.

Thursday, August 2:

Stations G4 - G7.

Weather, cloudy, wind strong, sea rough.

1800 Altered course to 230° to avoid excessive rolling.

Friday, August 3:

Stations G8 - G10, E1.

Weather, clear, wind and sea moderate.

Saturday, August 4:

Stations E2 - E5.

Weather clear, wind light, sea light to moderate.

Sunday, August 5:

Stations E6 - E10.

Weather partly cloudy, negligible wind, sea calm.

Monday, August 6:

Stations D1 - D4.

Weather partly cloudy, wind light, sea calm.

2200 Entered Winter Harbour to pick up mail. Secured for night.

Tuesday, August 7:

Doe left Cedarwood to return to Nanaimo.

0640 Cedarwood left Winter Harbour to be on Station C1 at 0900.

Watches as follows:

(a) Herlinveaux and Palmer.

(b) Morgan and Stickland.

Shand in charge, not standing watch.

Stations C1 - C3.

Weather overcast, wind moderate, sea light.

Wednesday, August 8:

Stations C4 - C7.

Weather overcast, wind moderate, sea light. At station C7 a bad kink formed in the wire necessitating reduction of depth of subsequent casts to 900 m.

Thursday, August 9:

Stations C8 - C11.

Weather overcast, wind moderate, sea light.

Friday, August 10:

Stations C12, B1 - B2, A1.

Weather overcast, calm, sea smooth.

Saturday, August 11:

Stations A2 - A5.

Weather cloudy, wind light, sea light.

Sunday, August 12:

Stations A6 - A9.

Weather cloudy, wind light, sea light.

Monday, August 13:

Stations A10 - A13.

Weather cloudy, wind light, sea light.

Tuesday, August 14:

Stations A14 - A16, J3 - J1.

Weather showery, wind light, sea smooth.

1800 Secured at Esquimalt.

The Data Record:

Station numbers are consecutive in the order of occupation along each line. The lines are lettered A to G inclusive. (Line F was omitted due to alteration of course between stations G6 and 7 - see Summary of Log, August 2).

Time, G.M.T. is the time the messenger was dropped (Greenwich Mean Time). When two casts were made the two times are shown.

Wire angle is the mean of angles read with the inclinometer at intervals of approximately one minute during the time of descent of the messenger.

Soundings in fathoms were taken when on the shelf. The ship's echo sounder could not sound the offshore depths.

Depth of observation is the maximum (successful) depth of the cast. When two depths are shown they correspond to the two times. e.g. At station G2 a cast successful to 100 m was made at 2237; a second cast from 125 m to 300 m was made at 2302.

Sea was recorded by the ship's officer on watch in the code used by the Royal Canadian Navy. e.g. 1-W-2 means that the sea height was 1 foot, the swell was advancing from the west, and the height of swell was 2 feet.

Wind force was estimated and recorded in Beaufort units.

Column headings

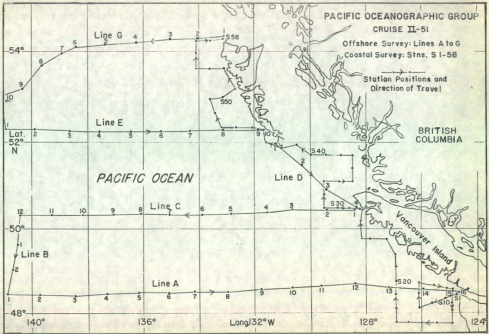
Depth	Observed wire depth, in metres.
T°C	Corrected temperature by protected reversing thermometers.
S ‰	Salinity. (0.03 + 1.805 Cl ‰)
σ_t	(Specific gravity -1) x 1000
$10^5 \sigma$	(Specific volume anomaly) x 10^5 (Sverdrup et al, 1942).
ΔD	Anomaly of dynamic height, in dynamic metres, of the sea surface relative to the indicated pressure surface (assuming that pressure in decibars = depth in metres).

Original data records and photographic prints of bathythermograph slides are on file at the Pacific Oceanographic Group, Nanaimo, B.C.

PACIFIC OCEANOGRAPHIC GROUP
CRUISE II-51

Offshore Survey: Lines A to G
Coastal Survey: Stns. S 1-58

Station Positions and
Direction of Travel



STATION G1: 54°18'N 133°06'W August 1, 1951 1634 GMT Wire angle:
 0° Sounding 230 fm. Depth of observation: 125 m. Weather: drizzle
 Sea: 1-W-2 Wind E-3

Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm ³)	10 ⁵ δ	$\Delta\rho$ (dyn.m.)
0	11.6	31.79	24.19	374.1	.0000
10	10.96	32.24	24.65	330.5	.0352
20	9.22	32.36	25.04	293.5	.0664
30	8.45	32.46	25.24	274.5	.0948
40	6.70	32.52	25.53	247.0	.1209
50	6.41	32.74	25.73	228.1	.1447
75	6.21	33.00	25.96	206.5	.1990
100	6.09	33.17	26.11	192.5	.2489
125	5.96	33.38	26.29	175.8	.2949

STATION G2: 54°15'N 134°02'W August 1, 1951 2237, 2302 GMT
 Wire angle: 4°, 4° Depth of Observation: 100, 300 m. Weather:
 overcast Sea: 2-SE-6 Wind: SSE-3

0	13.3	31.88	23.94	398.0	.0000
10	13.06	31.88	23.98	394.4	.0396
20	9.73	32.05	24.71	324.8	.0756
30	8.75	32.24	25.02	295.6	.1066
40	7.79	32.40	25.28	270.8	.1349
50	7.51	32.41	25.33	266.3	.1618
75	6.22	32.84	25.84	217.9	.2223
100	5.98	33.19	26.14	189.7	.2732
125	6.26	33.53	26.38	167.5	.3179
150	6.22	33.62	26.45	161.0	.3590
200	5.84	33.84	26.67	140.6	.4344
300	5.16	33.98	26.86	123.6	.5664

STATION G3: 54°13'N 135°03'W August 2, 1951 0434 GMT Wire
 angle: 4° Depth of observation: 1200 m. Weather: Overcast
 Sea: 2-SW-6 Wind: S-3

0	14.1	32.31	24.13	379.9	.0000
10	13.96	32.29	24.12	381.1	.0380
20	12.88	32.38	24.41	353.5	.0748
30	10.13	32.43	24.94	303.3	.1076
40	9.31	32.43	25.06	289.9	.1373
50	8.71	32.45	25.19	279.6	.1658
75	5.40	32.58	25.73	228.2	.2292
100	4.37	32.71	25.94	208.4	.2838
125	4.75	33.03	26.16	187.7	.3333
150	6.17	33.64	26.47	159.2	.3767
200	5.87	33.79	26.63	144.5	.4526
300	5.22	33.93	26.82	127.3	.5885
400	4.78	33.96	26.89	121.5	.7129
600	3.95	34.10	27.09	103.5	.9379
800	3.49	34.22	27.23	91.2	1.1327
1000	3.27	34.31	27.32	83.6	1.3077
1200	2.83	34.39	27.43	73.6	1.4651

STATION G4 54°10' N 136°15'W August 2, 1951 1036 GMT Wire angle:
 1° Depth of observation: 1200 m. Weather: Clear Sea: 2-SW-4 Wind: SW-4

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm ³)	10 ⁵ δ	ΔD (dyn.m.)
0	14.0	32.24	24.08	384.6	0000
10	13.94	32.19	24.05	387.7	.0386
20	12.48	32.24	24.38	356.4	.0758
30	10.48	32.26	24.74	322.3	.1098
40	9.20	32.29	24.98	299.5	.1408
50	7.90	32.36	25.24	274.8	.1696
75	6.01	32.48	25.58	242.5	.2342
100	5.46	32.64	25.77	224.7	.2928
125	5.71	32.95	25.99	204.1	.3462
150	6.22	33.45	26.32	173.4	.3934
200	5.98	33.77	26.60	147.3	.4736
300	5.29	33.88	26.77	132.1	.6133
400	4.76	33.96	26.90	120.6	.7397
600	4.01	34.09	27.08	104.5	.9649
800	3.49	34.20	27.22	92.1	1.1615
1000	3.32	34.34	27.34	82.0	1.3355
1200	2.86	34.37	27.41	75.8	1.4933

STATION G5 54°07'N 137°21'W August 2, 1951 1634GMT Wire angle:
 4° Depth of Observation: 1000 m. Weather: Partly cloudy Sea:
 2-SW-8 Wind: SWxS-2

0	13.75	32.22	24.11	381.7	0000
10	13.62	32.21	24.13	380.2	.0381
20	13.57	32.21	24.15	378.4	.0760
30	10.75	32.21	24.67	329.0	.1114
40	8.37	32.26	25.09	288.9	.1423
50	6.81	32.26	25.30	269.0	.1702
75	5.92	32.26	25.42	257.7	.2360
100	5.26	32.33	25.50	250.4	.2996
125	5.95	32.53	25.63	238.4	.3606
150	6.36	32.90	25.86	216.9	.4176
200	6.57	33.50	26.31	174.9	.5155
300	5.96	33.88	26.69	140.2	.6731
400	5.31	33.96	26.83	127.6	.8070
600	4.60	34.10	27.02	110.9	1.0454
800	4.07	34.19	27.16	98.9	1.2552
1000	3.63	34.27	27.26	90.1	1.4442

STATION 06: 54°04'N 138°23'W August 2, 1951 2242 GMT Wire angle: 7°
 Depth of observation: 150^m Weather: overcast Sea: 3-SSW-8 Wind: SSW-6

Depth	T	S	σ_t	$10^5 \delta$	ΔD
(m)	(°C)	(‰)	(mg/cm ³)		(dyn.m.)
0	13.9	32.00	23.92	399.9	.000
10	13.82	32.07	24.00	392.5	.0396
20	12.24	32.14	24.35	359.2	.0772
30	9.84	32.14	24.76	320.4	.1112
40	8.59	32.33	25.12	286.1	.1415
50	7.62	32.38	25.30	269.1	.1693
75	5.64	32.53	25.67	234.0	.2322
100	5.63	32.76	25.86	216.2	.2884
125	6.14	33.29	26.20	184.3	.3385
150	6.14	33.62	26.46	160.0	.3815

STATION 07: 53°58'N 138°56'W August 3, 1951 0435 GMT Wire angle: 1°
 Depth of observation: 1000 m. Weather: Partly cloudy Sea: 3-SW-8
 Wind: S-5

0	13.6	32.46	24.33	360.8	0000
10	13.47	32.45	24.35	359.1	.0360
20	10.48	32.46	24.91	305.8	.0692
30	8.52	32.53	25.28	270.8	.0981
40	7.10	32.53	25.49	250.7	.1242
50	6.00	32.55	25.64	236.6	.1485
75	4.82	32.58	25.80	221.5	.2058
100	4.20	32.76	26.00	202.6	.2588
125	4.94	33.38	26.41	164.1	.3046
150	5.79	33.70	26.57	149.5	.3438
200	5.44	33.84	26.72	135.7	.4151
300	4.60	33.91	26.87	122.2	.5441
400	4.18	33.98	26.97	113.4	.6619
600	3.75	34.17	27.17	95.8	.8711
800	3.36	34.25	27.27	87.2	1.0541
1000	3.02	34.36	27.40	75.8	1.2171

STATION 08: 53°41'N 139°45'W August 3, 1951 1033 GMT Wire angle: 8°
 Depth of observation: 1200 m. Weather: Cloudy Sea: 2-SSW-6 Wind: SE-2

Depth	T	S	σ_t	$10^5 \delta$	ΔD
(m)	(°C.)	(°/oo)	(mg/cm ³)		(dyn.m.)
0	13.65	32.48	24.33	360.8	0000
10	13.54	32.48	24.33	361.1	.0361
20	9.45	32.57	25.17	281.1	.0682
30	7.31	32.57	25.49	250.7	.0948
40	5.83	32.58	25.68	232.7	.1189
50	4.88	32.60	25.83	218.5	.1415
75	4.15	32.72	25.98	204.3	.1944
100	3.99	32.93	26.16	187.4	.2433
125	5.14	33.46	26.46	159.5	.2867
150	5.39	33.72	26.63	143.7	.3246
200	4.99	33.81	26.75	132.7	.3937
300	3.98	33.86	26.90	119.0	.5195
400	3.98	33.98	26.99	111.3	.6347
600	3.79	34.13	27.14	98.5	.8445
800	3.38	34.27	27.29	85.5	1.0285
1000	3.02	34.31	27.35	80.3	1.1943
1200	2.66	34.41	27.46	70.6	1.3451

STATION 09: 53°11'N 140°32'W August 3, 1951 1659, 1725 GMT Wire
 angle: 1°, 1° Depth of observation: 125, 1200 m. Weather: Partly cloudy
 Sea: 0-SW-2 Wind: 0

0	13.4	32.53	24.43	351.3	0000
5	13.33	32.57	24.46	348.7	.0175
15	13.3	32.46	24.38	356.4	.0528
25	8.57	32.55	25.29	269.7	.0841
35	7.35	32.65	25.55	245.0	.1098
55	4.91	32.67	25.86	215.8	.1559
80	4.18	32.74	25.99	203.3	.2083
105	4.51	33.03	26.19	184.5	.2568
125	5.16	33.52	26.50	155.7	.2908
150	5.49	33.72	26.62	144.6	.3283
200	4.24	33.77	26.80	127.6	.3964
300	3.90	33.94	26.98	111.3	.5158
400	4.20	34.10	27.06	105.0	.6240
600	3.57	34.19	27.20	92.6	.8216
800	3.28	34.31	27.33	81.5	.9956
1000	3.00	34.41	27.44	72.0	1.1492
1200	2.70	34.44	27.48	68.7	1.2900

STATION E1: 52°18'N 140°57.5' W August 4, 1951 0438GMT Wire angle: 0°
 Depth of observation: 1200 m. Weather: Partly cloudy Sea: 1-WNW-3
 Wind: 0

Depth	T	S	σ_t	$10^5 \delta$	$\Delta\rho$
(m)	(°C)	(°/∞)	(mg/cm ³)		(dyn.m.)
0	14.0	32.40	24.20	373.2	0000
10	13.65	32.40	24.27	366.8	.0370
20	13.29	32.46	24.39	355.4	.0731
30	8.88	32.52	25.22	276.5	.1047
40	8.37	32.57	25.34	265.1	.1318
50	7.62	32.57	25.46	253.9	.1577
75	5.20	32.57	25.76	225.3	.2176
100	4.45	32.65	25.89	213.0	.2724
125	4.57	33.15	26.27	177.3	.3212
150	4.41	33.58	26.63	143.4	.3613
200	4.08	33.70	26.76	131.3	.4300
300	4.05	33.84	26.88	120.8	.5560
400	3.88	33.98	27.00	110.3	.6716
600	3.63	34.19	27.19	93.6	.8756
800	3.23	34.29	27.31	83.2	1.0524
1000	2.95	34.32	27.36	79.4	1.2150
1200	2.64	34.41	27.46	70.3	1.3646

STATION E2 52°17'N 139°50'W August 4, 1951 1034 GMT Wire angle: 0°
 Depth of observation: 1000 m. Weather: Partly cloudy Sea: 1-NW-3 Wind: NW-2

0	13.9	32.55	24.34	359.8	0000
10	13.79	32.53	24.34	360.1	.0360
20	13.55	32.48	24.35	359.3	.0720
30	9.70	32.55	25.11	287.0	.1043
40	8.45	32.57	25.32	267.0	.1320
50	7.37	32.57	25.48	252.0	.1579
75	4.78	32.58	25.80	221.5	.2171
100	4.48	32.81	26.01	201.7	.2700
125	4.42	33.36	26.45	160.1	.3153
150	4.34	33.60	26.66	140.5	.3528
200	4.08	33.76	26.81	126.6	.4196
300	3.95	33.93	26.96	113.3	.5396
400	3.98	34.05	27.05	105.6	.6490
600	3.63	34.19	27.19	93.6	.8422
800	3.28	34.34	27.35	79.6	1.0214
1000	2.92	34.37	27.41	74.6	1.1756

STATION E3: 52°15' N 138°35'W August 4, 1951 1652 GMT Wire angle: 3°
 Depth of observation: 150 m. Weather Partly cloudy Sea: 0-NW-2 Wind: NW-2

Depth	T	S	σ_t	$10^5 \delta$	ΔD
(m)	(°C)	(°/oo)	(mg/cm ³)		(dyn.m.)
0	14.4	32.46	24.16	377.0	0000
10	14.39	32.46	24.16	377.3	.0377
20	11.52	32.52	24.78	318.3	.0725
30	9.44	32.58	25.18	280.3	.1024
40	7.81	32.58	25.42	257.5	.1293
49	6.98	32.57	25.53	247.2	.1520
75	5.09	32.62	25.80	221.5	.2130
100	4.63	32.69	25.90	212.2	.2672
125	4.69	33.45	26.50	155.5	.3131
150	5.00	33.60	26.58	148.3	.3511

STATION E4: 52°14' N 137° 38'W August 4, 1951 2234 GMT Wire angle: 4°
 Depth of observation: 1000 m. Weather: Partly cloudy Sea: 1-NW-4
 Wind: WNW-2

0	14.75	32.19	23.89	402.8	0000
10	14.11	32.17	24.00	392.5	.0398
20	13.97	32.19	24.04	388.9	.0788
30	11.16	32.21	24.60	335.7	.1151
40	9.79	32.38	24.96	301.5	.1469
50	8.20	32.53	25.33	266.3	.1753
75	5.90	32.55	25.66	234.9	.2380
100	5.26	32.58	25.75	226.5	.2956
125	5.87	33.17	26.14	190.0	.3477
150	5.61	33.58	26.50	156.1	.3909
200	5.27	33.76	26.68	139.4	.4648
300	4.86	33.89	26.83	126.2	.5976
400	4.56	34.02	26.96	114.7	.7180
600	4.06	34.17	27.14	99.0	.9316
800	3.55	34.24	27.25	89.5	1.1200
1000	3.15	34.36	27.36	76.1	1.2876

STATION E5: 52°14'N 136°25'W August 5, 1951 0435, 0453 GMT Wire angle: 1°
 - Depth of observation: 40, 1200 m. Weather: Partly cloudy Sea: 0-NW-2 Wind: 0

Depth	T	S	σ_t	$10^5 \delta$	ΔD
(m)	(°C)	(°/∞)	(mg/cm ³)		(dyn.m.)
0	14.9	32.14	23.81	410.4	0000
10	14.36	32.12	23.92	400.2	.0405
20	13.82	32.12	24.02	390.8	.0801
30	10.42	32.29	24.79	317.5	.1155
40	8.72	32.31	25.08	289.9	.1458
50	6.31	32.45	25.52	248.0	.1728
75	5.60	32.69	25.80	221.6	.2315
100	5.80	33.15	26.14	189.7	.2829
125	6.06	33.53	26.40	165.5	.3273
150	5.98	33.69	26.54	152.4	.3670
200	5.76	33.86	26.70	137.8	.4396
300	5.20	33.96	26.85	124.5	.5708
400	4.86	34.05	26.96	115.0	.6906
600	4.07	34.15	27.12	100.7	.9082
800	3.60	34.29	27.28	86.8	1.0938
1000	3.16	34.36	27.38	78.1	1.2586
1200	2.70	34.39	27.44	72.5	1.4092

STATION E6: 52°14'N 135°20'W August 5, 1951 1036 GMT Wire angle: 5°
 Depth of observation: 1000 m. Weather: Cloudy Sea: 0-NW-2 Wind: 0

0	14.5	32.22	23.96	396.0	0000
10	14.03	32.22	24.06	386.8	.0391
20	13.92	32.21	24.07	386.1	.0778
30	10.46	32.29	24.78	318.5	.1130
40	8.47	32.33	25.14	284.1	.1431
50	7.68	32.38	25.29	270.0	.1708
75	5.73	32.58	25.70	231.1	.2335
100	5.49	32.79	25.89	213.3	.2890
125	6.06	33.24	26.18	186.2	.3390
150	6.27	33.65	26.48	158.2	.3820
200	5.65	33.81	26.68	139.5	.4664
300	5.36	33.94	26.82	127.4	.5898
400	4.73	34.06	26.97	113.8	.7104
600	4.15	34.13	27.09	103.7	.9280
800	3.69	34.31	27.29	86.0	1.1276
1000	3.21	34.37	27.38	78.1	1.2916

STATION E7: 52°17'N 134°17'W 1638 GMT Wire angle: 2° Depth of observation: 1200 m. Weather: Cloudy Sea: O-NW-1 Wind: 0

Depth	T	S	σ_t	$10^5 \delta$	ΔD
(m)	(°C.)	(‰)	(mg/cm ³)		(dyn.m.)
0	14.8	32.09	23.80	411.4	0000
10	14.62	32.09	23.84	407.9	.0410
20	14.63	32.14	23.87	405.2	.0816
30	10.78	32.15	24.62	333.8	.1186
40	9.60	32.15	24.82	314.8	.1510
50	7.59	32.28	25.22	278.7	.1806
75	6.31	32.48	25.54	248.4	.2460
100	6.04	32.62	25.89	232.3	.3058
125	6.58	33.10	26.00	203.4	.3603
150	6.70	33.43	26.24	181.0	.4083
200	6.50	33.77	26.54	153.2	.4919
300	5.84	33.91	26.73	136.2	.6366
400	5.34	33.98	26.84	128.7	.7680
600	4.48	34.10	27.03	109.8	1.0044
800	3.99	34.24	27.20	94.9	1.2092
1000	3.45	34.34	27.35	83.1	1.3872
1200	3.03	34.37	27.40	77.1	1.5474

STATION E8: 52°18'N 133°06'W 2232 GMT Wire angle: 0° Depth of observation: 1200 m. Weather: - Sea: O-SW-2 Wind: SSW-1

0	15.0	32.10	23.76	415.2	0000
10	14.62	32.10	23.84	407.9	.0412
20	14.67	32.10	23.83	409.0	.0680
30	14.73	32.12	23.83	409.3	.1229
40	13.91	32.12	24.00	393.2	.1630
50	9.10	32.21	24.94	303.5	.1979
75	6.70	32.41	25.44	255.9	.2678
100	6.02	32.58	25.68	235.2	.3292
125	6.11	33.00	25.96	205.2	.3842
150	6.26	33.48	26.34	171.5	.4314
200	5.97	33.79	26.62	145.4	.5106
300	5.37	33.91	26.79	130.3	.6484
400	4.90	34.00	26.91	119.7	.7734
600	4.17	34.15	27.10	102.9	.9960
800	3.68	34.25	27.24	90.7	1.1896
1000	3.31	34.34	27.35	81.0	1.3612
1200	2.86	34.39	27.43	73.9	1.5160

STATION E9: 52°19'N 131°52'W August 6, 1951 0437 GMT Wire angle:
 0° Depth of observation: 1200 m. Weather: Partly cloudy Sea: 0-W-1
 Wind: 0

Depth	T	S	σ_t	$10^5 \delta$	Δ^D
(m)	(°C)	(‰)	(mg/cm ³)		(dyn.m.)
0	15.3	32.12	23.71	419.9	0000
10	14.33	32.10	23.90	402.1	.0411
20	11.91	32.12	24.40	354.5	.0789
30	10.47	32.19	24.70	326.1	.1130
40	9.79	32.26	24.87	310.1	.1448
50	9.04	32.31	25.03	294.9	.1750
75	7.95	32.52	25.36	263.8	.2449
100	6.76	32.76	25.71	230.7	.3067
125	6.71	33.08	25.97	206.3	.3613
150	6.50	33.22	26.10	194.2	.4113
200	6.27	33.69	26.50	156.9	.4991
300	5.61	33.91	26.76	133.2	.6441
400	5.27	34.00	26.86	124.8	.7731
600	4.53	34.10	27.03	109.8	1.0077
800	3.91	34.22	27.19	95.7	1.2133
1000	3.46	34.34	27.38	83.3	1.3923
1200	3.01	34.37	27.40	77.1	1.5527

STATION E10: 52°16.5' N 131°32'W August 6, 1951 0728, 0702 GMT
 Wire angle: - Sounding: 170 fm. Depth of observation: 40, 350 m.
 Weather: Cloudy Sea 0-W-1 Wind: 0

0	14.2	32.22	24.02	390.3	0000
10	11.68	32.22	24.51	343.8	.0367
20	11.02	32.28	24.68	327.8	.0703
25	10.98	32.24	24.66	329.8	.0867
30	9.22	32.31	25.00	297.4	.1024
40	7.27	32.55	25.48	251.7	.1299
50	7.20	32.57	25.51	249.0	.1549
75	6.70	33.15	26.02	200.9	.2112
100	6.43	33.31	26.18	186.0	.2595
150	5.90	33.67	26.53	153.4	.3444
250	5.75	33.79	26.64	144.0	.4930
350	5.41	33.89	26.76	133.7	.6318

STATION D1: 51°58.5'N 131°10'W August 6, 1951 1034 GMT Wire angle:
 5° Depth of observation: 200 m. Weather: Drizzle Sea: C-NW-1 Wind: 0

Depth	T	S	σ_t	$10^5 \delta$	ΔD
(m)	(°C)	(‰)	(mg/cm ³)		(dyn.m.)
2	13.44	32.09	24.07	385.6	0000
10	12.50	32.14	24.30	363.8	.0375
20	11.27	32.24	24.61	334.5	.0724
30	9.71	32.31	24.92	305.2	.1044
40	9.28	32.50	25.14	284.2	.1333
50	9.01	32.60	25.26	273.0	.1617
75	6.3	32.64	25.68	233.1	.2250
100	6.5	32.67	25.68	233.5	.2833
125	6.49	33.17	26.06	197.7	.3372
150	6.56	33.46	26.28	177.3	.3840
200	6.04	33.76	26.58	149.2	.4656

STATION D2: 51°28'N 130°18'W August 6, 1951 1639 GMT Wire angle:
 1° Depth of observation: 400 m. Weather: Cloudy Sea: C-W-1 Wind: 0

0	14.8	31.46	23.31	458.1	0000
10	13.88	31.53	23.55	435.4	.0447
20	9.86	31.90	24.59	336.3	.0833
30	8.99	32.02	24.81	315.5	.1158
40	8.02	32.31	25.18	280.3	.1456
50	6.53	32.55	25.57	243.3	.1718
75	6.00	32.78	25.82	219.8	.2197
100	6.43	33.12	26.04	199.3	.2721
125	6.41	33.50	26.34	171.3	.3184
150	6.43	33.76	26.54	152.5	.3589
200	6.19	33.88	26.66	141.8	.4325
300	5.78	33.93	26.75	134.3	.5705
400	5.21	33.98	26.86	124.8	.7001

STATION D3: 50°55'N 129°24'W August 6, 1951 2218 GMT Wire angle:
 3° Sounding: 90 fm. Depth of observation: 150 m. Weather: Cloudy
 Sea: 0-NW-1 Wind: NW-2

Depth	T	S	σ_t	$10^5 \delta$	$\Delta\rho$
(m)	(°C)	(°/oo)	(mg/cm ³)		(dyn.m.)
0	15.07	31.64	23.39	450.5	0000
10	14.47	31.71	23.57	433.6	.0442
20	13.69	31.86	23.85	407.1	.0862
30	11.72	31.98	24.32	362.4	.1247
40	8.52	32.14	24.97	300.5	.1579
50	7.49	32.31	25.26	272.8	.1865
75	6.61	32.98	25.90	212.3	.2472
100	6.61	33.45	26.27	177.6	.2959
125	6.44	33.65	26.45	160.8	.3382
150	6.32	33.81	26.59	147.8	.3768

STATION D4: 50°29'N 128°17.5'W August 7, 1951 0418 GMT Wire angle:
 3° Sounding: 50 fm. Depth of observation: 75 m. Weather: Partly
 cloudy Sea: 1-NWxW-2 Wind: NW-3

2	12.66	32.15	24.27	366.5	0000
10	11.30	32.33	24.67	328.6	.0348
19	9.13	32.52	25.18	290.1	.0622
30	7.9	32.71	25.52	247.9	.0912
40	7.44	32.84	25.68	232.7	.1152
50	7.02	33.03	25.89	212.9	.1375
75	6.64	33.26	26.12	191.5	.1881

STATION C1: 50°27'N 128°22.5'W August 7, 1951 1612, 1618 GMT
 Wire angle: 0°, 0° Sounding: 89 fm. Depth of observation 30, 125 m.
 Weather: Fog Sea: 0-NWxW-1 Wind: NWxW-3

0	13.26	32.10	24.12	380.8	0000
10	12.39	32.07	24.26	367.6	.0374
20	8.85	32.62	25.30	268.7	.0693
30	8.03	32.83	25.59	241.2	.0948
40	7.44	32.98	25.79	222.2	.1179
50	7.23	33.03	25.86	215.8	.1398
75	6.56	33.29	26.15	188.5	.1904
100	6.48	33.43	26.27	177.6	.2361
125	6.41	33.74	26.52	154.2	.2776

STATION C2: 50°28'N 129°34'W August 7, 1951 2227 GMT Wire angle:
 1° Depth of observation: 1200 m. Weather: Overcast Sea: 2-NW-5
 Wind: NW-4

Depth	T	S	σ_t	$10^5 \delta$	$\Delta\rho$
(m)	(°C)	(‰)	(mg/cm ³)		(dyn.m.)
0	16.2	32.02	23.34	445.8	0000
10	14.76	32.02	23.75	416.4	.4311
20	13.7	32.22	24.12	381.3	.0830
30	10.15	32.29	24.83	313.8	.1178
40	8.97	32.28	25.12	286.1	.1478
50	7.91	32.45	25.31	268.1	.1755
75	6.58	32.53	25.55	245.4	.2397
100	5.96	32.60	25.68	233.3	.2995
125	7.05	33.05	25.90	213.0	.3553
150	6.62	33.40	26.23	182.0	.4047
200	6.23	33.79	26.58	149.2	.4875
300	5.05	33.84	26.77	131.9	.6281
400	4.66	33.94	26.89	121.3	.7547
600	4.33	34.19	27.13	100.3	.9763
800	3.66	34.25	27.24	90.5	1.1671
1000	3.27	34.36	27.36	80.3	1.3379
1200	2.90	34.37	27.41	75.8	1.4939

STATION C3: 50°28'N 130°37'W August 8, 1951 0421, 0440 GMT Wire
 angle: 2°, 3° Depth of observation: 150, 1200 m. Weather: Cloudy
 Sea: 1-WNW-2 Wind: WNW-4

0	16.35	31.76	23.20	468.7	0000
10	15.61	31.91	23.44	446.1	.0457
20	14.74	31.93	23.68	423.3	.0892
30	11.78	32.02	24.34	360.5	.1284
40	9.78	32.12	24.76	320.5	.1624
50	8.17	32.31	25.16	282.4	.1926
75	6.22	32.60	25.64	236.8	.2575
100	6.24	32.91	25.89	213.4	.3138
125	6.12	33.22	26.15	189.0	.3641
150	6.18	33.60	26.44	162.0	.4080
200	5.71	33.81	26.66	141.5	.4838
300	5.31	33.93	26.81	126.3	.6186
400	4.62	33.93	26.89	121.2	.7426
600	4.06	34.12	27.09	103.6	.9684
800	3.68	34.25	27.24	90.5	1.1624
1000	3.32	34.36	27.36	80.3	1.3332
1200	2.89	34.39	27.43	73.9	1.4874

STATION C4: 50°24'N 131°34'W August 8, 1951 1027 GMT Wire angle: 2°
 Depth of observation: 1200 m. Weather Drizzle Sea: 1-NW-4 Wind: NNW-3

Depth	T	S	σ_t	$10^5 \delta$	ΔD
(m)	(°C)	(‰)	(mg/cm ³)		(dyn.m.)
0	16.3	32.09	23.46	443.8	0000
10	15.74	32.00	23.52	438.4	.0441
20	13.21	32.03	24.07	386.1	.0853
30	11.16	32.15	24.56	339.5	.1216
40	10.61	32.46	24.89	308.2	.1540
50	8.29	32.50	25.29	270.0	.1829
75	5.99	32.58	25.67	234.0	.2459
100	5.90	32.81	25.86	216.3	.3022
125	5.88	33.17	26.14	190.0	.3530
150	5.90	33.45	26.36	169.5	.3980
200	5.64	33.77	26.64	143.3	.4762
300	4.93	33.88	26.82	127.1	.6114
400	4.57	33.98	26.93	117.5	.7336
600	4.00	34.12	27.10	102.6	.9536
800	3.52	34.27	27.27	87.6	1.1482
1000	3.20	34.31	27.33	82.6	1.3140
1200	2.79	34.39	27.40	76.5	1.4702

STATION C5: 50°20'N 132°52'W August 8, 1951 1634 GMT Wire angle: 4°
 Depth of observation: 1200 m. Weather: Overcast Sea: 2-NW-3 Wind NW-3

0	16.05	32.45	23.80	411.4	0000
10	15.50	32.46	23.93	399.2	.0405
20	14.16	32.46	24.23	371.8	.0791
30	12.38	32.58	24.62	333.9	.1144
40	10.65	32.53	24.94	303.5	.1462
50	9.17	32.53	25.19	280.6	.1754
75	6.38	32.65	25.67	234.0	.2398
100	5.50	32.64	25.76	225.6	.2972
125	5.53	32.93	26.00	203.1	.3508
150	5.48	33.43	26.40	165.4	.3968
200	5.27	33.74	26.66	141.3	.4736
300	4.70	33.89	26.85	124.2	.6064
400	4.32	33.98	26.96	114.5	.7258
600	3.84	34.19	27.18	94.8	.9250
800	3.45	34.31	27.33	81.7	1.1114
1000	3.03	34.32	27.35	80.5	1.2736
1200	2.71	34.39	27.45	71.4	1.4256

STATION C6: 50°19'N 133°55'W August 8, 1951 2223 GMT Wire angle: 2°
 Depth of observation: 1200 m. Weather: Overcast Sea: 1-W-3 Wind: NNW-3

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm ³)	$10^5 \delta$	ΔD (dyn. m.)
0	16.2	32.03	23.44	445.8	0000
10	15.72	32.33	23.78	413.6	.0430
20	13.93	32.41	24.22	371.8	.0822
30	11.61	32.50	24.73	323.4	.1170
40	9.23	32.55	25.18	280.4	.1472
50	7.68	32.55	25.42	257.7	.1741
75	5.90	32.58	25.67	234.0	.2385
100	5.69	32.62	25.74	227.5	.2932
125	5.64	32.83	25.90	212.7	.3483
150	5.88	33.45	26.36	169.3	.3960
200	5.46	33.74	26.64	143.3	.4742
300	4.81	33.86	26.82	127.0	.6094
400	4.36	33.93	26.91	119.2	.7325
600	3.85	34.13	27.13	99.6	.9513
800	3.47	34.27	27.27	87.6	1.1385
1000	3.19	34.32	27.34	81.7	1.3077
1200	2.78	34.37	27.42	74.6	1.4641

STATION C8: 50°19'N 136°04'W August 9, 1951 1038 GMT Wire angle: 4°
 Depth of observation: 900 m. Weather: Overcast Sea: 2-NNW-4 Wind: NNW-5

2	15.32	32.62	24.09	383.6	0000
10	15.33	32.62	24.09	383.9	.0384
20	14.44	32.62	24.28	366.0	.0759
30	11.63	32.65	24.86	311.0	.1097
40	10.08	32.60	25.09	289.1	.1397
50	8.52	32.62	25.35	264.4	.1674
75	6.28	32.65	25.68	233.1	.2293
100	5.70	32.71	25.80	221.9	.2865
125	5.55	33.14	26.16	188.0	.3374
150	5.28	33.60	26.55	151.3	.3801
200	4.90	33.70	26.58	146.8	.4551
300	4.54	33.84	26.83	125.8	.5924
400	4.15	33.93	26.94	116.2	.7134
500	4.01	34.06	27.06	106.5	.8242
700	3.52	34.19	27.21	92.4	1.0222
900	3.11	34.31	27.34	80.8	1.1954

STATION C9: 50°19'N 137°05'W August 9, 1951 1627 GMT Wire angle: 6°
 Depth of observation: 900 m. Weather: Overcast Sea: 2-WNW-4 Wind:
 WNW-4

Depth	T	S	σ_t	$10^5 \delta$	ΔD
(m)	(°C)	(°/oo)	(mg/cm ³)		(dyn.m.)
2	15.04	32.43	24.00	392.2	0000
10	15.01	32.46	24.04	388.7	.0390
20	13.19	32.48	24.42	352.7	.0761
30	10.07	32.57	25.06	291.8	.1083
40	9.09	32.57	25.23	275.7	.1367
50	7.97	32.53	25.38	261.5	.1636
75	5.45	32.60	25.74	227.2	.2247
100	5.12	32.69	25.85	217.0	.2802
125	5.25	33.26	26.29	175.5	.3292
150	5.16	33.60	26.57	149.3	.3698
200	5.07	33.77	26.71	136.5	.4413
300	5.03	33.94	26.85	124.4	.5717
400	4.59	34.00	26.94	116.6	.6922
500	4.13	34.08	27.06	105.7	.8034
700	3.85	34.22	27.22	91.6	1.0006
900	3.20	34.31	27.32	83.0	1.1752

STATION C10: 50°19'N 138°12'W August 9, 1951 2226 GMT Wire angle: 6°
 Depth of observation: 900 m. Weather: Overcast Sea: 1-NW-3 Wind:
 NNW-3

2	14.79	32.45	24.07	385.6	0000
10	14.71	32.45	24.09	383.9	.0385
20	13.30	32.45	24.38	356.4	.0755
30	11.18	32.50	24.82	314.7	.1091
40	9.02	32.53	25.21	277.5	.1387
50	8.21	32.52	25.32	267.2	.1659
75	5.43	32.58	25.73	228.2	.2279
100	4.78	32.65	25.86	216.1	.2834
125	5.09	33.19	26.26	178.3	.3327
150	5.15	33.58	26.55	151.2	.3739
200	4.95	33.76	26.72	135.5	.4456
300	4.74	33.86	26.82	127.0	.5768
400	4.32	33.96	26.96	114.5	.6976
500	4.04	34.06	27.05	106.5	.8081
700	3.65	34.22	27.22	91.6	1.0061
900	3.18	34.29	27.32	82.8	1.1805

STATION C11: 50°19'N 139°17'W August 10, 1951 0428 GMT Wire angle: 3°
 Depth of observation: 900 m. Weather Overcast Sea: 1-NW-2 Wind: NW-1

Depth	T	S	σ_t	$10^5 \delta$	ΔD
(m)	(°C.)	(‰)	(mg/cm ³)		(dyn.m.)
2	14.50	32.41	24.10	382.7	0000
10	14.31	32.41	24.14	379.2	.0381
20	10.59	32.53	24.97	300.3	.0721
30	8.51	32.53	25.28	270.8	.1006
40	7.40	32.53	25.45	254.5	.1269
50	6.31	32.57	25.62	238.5	.1516
75	4.99	32.62	25.82	219.6	.2088
100	4.89	32.96	26.10	193.3	.2604
125	5.23	33.53	26.50	155.8	.3040
150	5.03	33.65	26.63	143.6	.3415
200	4.82	33.79	26.76	131.6	.4103
300	4.40	33.91	26.90	119.3	.5357
400	4.15	34.00	27.00	110.6	.6507
500	3.92	34.08	27.08	103.5	.7577
700	3.45	34.19	27.22	91.3	.9525
900	3.13	34.29	27.33	81.7	1.1255

STATION C12: 50°19'N 140°23'W August 10, 1951 1025 GMT Wire angle:
 1° Depth of observation: 200 m. Weather Overcast Sea: 0-NW-1 Wind:
 NW-1

2	14.66	32.45	24.10	382.7	0000
10	14.28	32.48	24.20	373.5	.0373
20	12.80	32.50	24.52	343.1	.0736
30	9.64	32.50	25.08	289.9	.1053
40	8.08	32.53	25.36	263.2	.1330
50	7.50	32.53	25.44	255.8	.1589
75	5.52	32.58	25.72	229.2	.2195
100	5.08	32.62	25.80	221.7	.2759
125	4.95	33.26	26.32	172.6	.3252
150	4.86	33.55	26.56	150.2	.3656
200	4.61	33.76	26.76	131.6	.4360

STATION B1: 49°41'N 140°30'W August 10, 1951 1632 GMT Wire angle:
 3° Depth of observation: 500 m. Weather: Overcast Sea: 0-NW-1
 Wind 0

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm ³)	$10^5 \delta$	ΔD (dyn.m.)
2	15.02	32.50	24.06	386.5	0000
10	14.58	32.50	24.16	377.3	.0382
20	12.25	32.53	24.64	331.7	.0736
30	9.28	32.53	25.17	281.3	.1043
40	8.61	32.53	25.27	271.9	.1320
50	7.32	32.53	25.46	253.8	.1582
75	5.24	32.58	25.76	225.3	.2181
100	5.28	32.71	25.85	217.0	.2734
125	5.04	33.19	26.26	178.3	.3228
150	4.96	33.65	26.63	143.6	.3631
200	4.82	33.79	26.76	131.6	.4319
300	4.40	33.93	26.91	118.3	.5569
400	4.01	34.00	27.01	109.5	.6708
500	3.82	34.10	27.11	100.6	.7758

STATION B2: 49°03'N 140°43'W August 10, 1951 2228 GMT Wire angle:
 2° Depth of observation: 900 m. Weather: Overcast Sea: 0-W-2 Wind:
 W-1

2	15.45	32.62	24.06	386.5	0000
10	14.59	32.60	24.24	369.7	.0378
20	13.97	32.60	24.36	358.4	.0742
30	9.54	32.64	25.21	277.5	.1060
40	8.78	32.64	25.33	266.2	.1332
50	7.7	32.64	25.49	251.0	.1590
75	5.36	32.69	25.83	218.7	.2178
100	5.04	32.74	25.90	212.3	.2717
125	4.89	33.22	26.30	174.5	.3201
150	4.84	33.60	26.60	146.4	.3602
200	4.50	33.76	26.77	130.6	.4294
300	4.12	33.89	26.91	117.1	.5532
400	3.94	34.02	27.03	107.4	.6654
500	3.75	34.10	27.12	99.6	.7689
700	3.38	34.24	27.26	87.5	.9561
900	3.02	34.31	27.36	78.7	1.1222

STATION A1: 48°28'N 140°53'W August 11, 1951 0429 GMT Wire angle: 1°
 Depth of observation: 900 m. Weather: Cloudy Sea: 0-W-1 Wind: 0

Depth	T	S	σ_t	$10^5 \delta$	ΔD
(m)	(°C)	(‰)	(mg/cm ³)		(dyn.m.)
2	16.28	32.52	23.81	410.4	0000
10	15.0	32.53	24.06	394.9	.0398
20	14.51	32.53	24.20	373.7	.0777
30	11.93	32.62	24.78	318.6	.1123
40	9.16	32.67	25.30	269.0	.1417
50	8.78	32.72	25.39	260.6	.1682
75	7.06	32.83	25.73	228.6	.2293
100	6.05	32.86	25.88	214.4	.2847
125	5.80	33.07	26.08	195.7	.3360
150	5.23	33.64	26.59	147.4	.3788
200	4.80	33.74	26.72	135.4	.4496
300	4.20	33.86	26.88	121.0	.5778
400	4.04	33.98	26.99	111.3	.6940
500	3.78	34.10	27.11	100.6	.8000
700	3.40	34.22	27.24	89.4	.9900
900	3.06	34.31	27.35	79.8	1.1692

STATION A2: 48°28'N 139°45'W August 11, 1951 1042 GMT Wire angle: 0°
 Depth of observation: 400 m. Weather: Partly Cloudy Sea: 0-W-1 Wind SE-1

2	16.00	32.57	23.91	400.8	0000
10	15.0	32.57	24.12	381.1	.0391
20	11.29	32.71	24.97	300.3	.0732
30	9.67	32.69	25.22	276.6	.1020
40	8.92	32.72	25.37	262.4	.1290
50	7.37	32.74	25.62	238.6	.1540
75	5.91	32.76	25.82	219.8	.2113
100	5.47	32.81	25.91	211.2	.2652
125	5.80	33.53	26.44	161.6	.3118
150	5.51	33.77	26.66	140.8	.3496
200	4.93	33.76	26.72	135.5	.4187
300	4.41	33.88	26.88	121.2	.5471
400	4.13	34.02	27.01	109.5	.6625

STATION A3: 48°28'N 136°28'W August 11, 1951 1627GMT Wire angle: 0°
 Depth of Observation: 400 fm. Weather: Partly cloudy Sea: 0-NW-1
 Wind: 0

Depth	T	S	σ_t	$10^5 \bar{\sigma}$	Δ^D
(m)	(°C)	(‰)	(mg/cm ³)		(dyn.m.)
2	15.90	32.57	23.93	398.9	0000
10	15.6	32.57	24.00	392.5	.0896
20	14.99	32.57	24.12	381.3	.0783
30	10.74	32.71	25.06	291.8	.1119
40	9.68	32.74	25.26	272.9	.1401
50	8.50	32.78	25.49	251.1	.1663
75	6.40	32.79	25.78	223.7	.2257
99	5.77	32.79	25.86	216.3	.2807
125	5.54	33.22	26.22	182.2	.3305
150	5.34	33.64	26.58	148.4	.3718
200	5.00	33.74	26.70	137.4	.4432
300	4.49	33.84	26.83	125.8	.5748
400	4.06	33.98	26.99	111.3	.6934

STATION A4: 48°31'N 137°20'W August 11, 1951 2224 GMT Wire angle: 0°
 Depth of observation: 900 fm. Weather: Overcast Sea: 0-WSW-2 Wind: W-2

2	16.39	32.52	23.77	414.3	0000
10	16.1	32.53	23.86	405.9	.0410
20	14.36	32.57	24.26	367.9	.0797
30	10.29	32.72	25.15	283.2	.1123
40	9.50	32.74	25.30	269.0	.1399
50	8.73	32.74	25.42	257.8	.1662
75	7.06	32.81	25.72	229.5	.2271
100	6.13	32.81	25.82	220.1	.2833
125	5.98	32.90	25.92	210.9	.3372
150	5.45	33.53	26.48	157.9	.3833
200	5.14	33.55	26.53	153.6	.4611
300	4.48	33.82	26.82	126.8	.6013
400	4.09	33.96	26.97	113.3	.7213
500	3.87	34.05	27.06	105.3	.8306
700	3.46	34.24	27.26	87.6	1.0234
900	3.10	34.35	27.38	77.1	1.1882

STATION A5: 48°31'N 136°10'W August 12, 1951 0432,0443 GMT Wire angle:
 2°, 4° Depth of observation: 30, 900 m. Weather: Cloudy Sea: 0-NE-3
 Wind: 0

Depth	T	S	σ_t	$10^5 \delta$	ΔD
(m)	(°C)	(‰)	(mg/cm ³)		(dyn.m.)
2	16.38	32.53	23.79	412.3	0000
10	16.06	32.55	23.88	404.0	.0408
20	13.82	32.62	24.40	354.6	.0788
30	10.13	32.69	25.15	283.2	.1106
40	9.43	32.72	25.28	270.9	.1383
50	8.30	32.72	25.47	253.0	.1645
75	6.33	32.79	25.79	222.6	.2240
100	5.83	32.78	25.84	212.2	.2991
125	5.81	33.22	26.19	185.1	.3295
150	5.45	33.65	26.58	148.4	.3712
200	5.09	33.74	26.89	138.4	.4429
300	4.56	33.82	26.81	127.8	.5760
400	4.19	33.98	26.98	112.5	.6962
500	3.85	34.10	27.10	101.5	.8032
700	3.46	34.22	27.24	89.5	.9942
900	3.11	34.32	27.35	79.8	1.1634

STATION A6: 48°31'N 135°05'W August 12, 1951 1032,1050 GMT Wire angle:
 0°, 0° Depth of observation: 300, 700 m. Weather: Cloudy Sea: 0-S-3
 Wind: SSW-1

2	15.61	32.58	23.96	396.0	0000
10	15.78	32.62	24.00	392.5	.0394
20	15.70	32.60	24.00	392.7	.0787
30	14.30	32.58	24.28	366.3	.1166
40	11.61	32.60	24.82	314.9	.1507
50	9.39	32.62	25.22	276.8	.1803
75	6.92	32.62	25.58	242.7	.2452
100	6.08	32.65	25.71	230.4	.3044
125	5.79	32.72	25.80	222.3	.3610
150	5.71	33.10	26.10	194.0	.4130
200	5.27	33.70	26.64	143.2	.4973
300	4.90	33.86	26.81	128.1	.6329
400	4.28	33.96	26.95	115.4	.7547
500	4.00	34.03	27.04	107.4	.8661
700	3.59	34.20	27.21	92.6	1.0661

STATION A7: 48°31'N 134°10'W August 12, 1951 1628 GMT Wire angle:
 1° Depth of observation: 900 m. Weather: Partly cloudy Sea: 0-N-2
 Wind: S-2

Depth	T	S	σ_t	$10^5 \delta$	$\Delta\rho$
(m)	(°C)	(‰)	(mg/cm ³)		(dyn.m.)
2	15.91	32.52	23.89	402.8	0000
10	15.85	32.52	23.90	402.1	.0402
20	14.50	32.55	24.22	371.8	.0789
30	11.89	32.53	24.72	324.3	.1137
40	10.08	32.57	25.07	291.0	.1445
50	8.31	32.65	25.41	258.6	.1720
75	6.46	32.62	25.64	236.9	.2339
100	5.74	32.72	25.80	221.9	.2913
125	5.66	32.98	26.02	201.2	.3442
150	5.60	33.41	26.37	168.4	.3904
200	5.35	33.76	26.67	140.5	.4678
300	4.63	33.86	26.84	125.0	.6004
400	4.21	33.98	26.97	113.3	.7196
500	4.02	34.06	27.06	105.6	.8290
700	3.60	34.24	27.24	89.7	1.0242
900	3.26	34.34	27.36	79.3	1.1932

STATION A8: 48°32'N 133°00'W August 12, 1951 2228 GMT Wire angle:
 10° Depth of observation: 900 m. Weather: Overcast Sea: 0-NE-2
 Wind: SSW-2

2	16.53	32.62	23.82	409.5	0000
10	16.30	32.62	23.88	404.0	.0407
20	16.27	32.62	23.89	403.3	.0810
30	12.35	32.62	24.69	327.2	.1176
40	9.32	32.62	25.23	275.7	.1477
50	7.74	32.65	25.50	250.0	.1740
75	6.42	32.65	25.67	234.1	.2345
100	6.07	32.71	25.76	225.8	.2920
125	5.66	32.86	25.92	210.8	.3466
150	5.56	33.36	26.33	172.2	.3944
200	5.13	33.74	26.68	139.3	.4723
300	4.65	33.86	26.83	126.0	.6049
400	4.29	33.96	26.95	115.4	.7256
500	4.05	34.02	27.02	109.3	.8380
700	3.58	34.19	27.20	93.5	1.0408
900	3.24	34.27	27.30	84.7	1.2190

STATION A9: 48°36'N 131°47'W August 13, 1951 0423 GMT Wire angle: 7°
 Depth of observation: 900 m. Weather: Overcast Sea: 1-S-3 Wind: S-3

Depth (m)	T (°C)	S (°/∞)	σ_t (mg/cm ³)	$10^5 \delta$	ΔD (dyn.m.)
2	15.98	32.41	23.78	413.3	0000
10	15.9	32.41	23.80	411.7	.0412
20	15.69	32.41	23.85	407.1	.0822
30	12.28	32.40	24.54	341.5	.1196
40	9.98	32.45	24.99	298.6	.1516
50	7.84	32.48	25.35	264.3	.1798
75	6.74	32.53	25.54	246.4	.2436
100	6.46	32.55	25.58	242.9	.3048
125	6.15	32.64	25.69	232.6	.3642
150	6.20	33.07	26.02	201.8	.4185
200	6.17	33.67	26.50	156.9	.5062
300	5.19	33.86	26.78	131.1	.6522
400	4.48	33.98	26.95	115.5	.7755
500	4.20	34.03	27.01	110.4	.8885
700	3.78	34.20	27.19	94.8	1.0937
900	3.39	34.29	27.30	85.1	1.2737

STATION A10: 48°38'N 130°40'W August 13, 1951 1035 GMT Wire Angle:
 5° Depth of observation: 900 m. Weather: Overcast Sea: 0-SSW-2
 Wind: S-3

2	16.00	32.29	23.69	421.9	0000
10	15.96	32.31	23.72	419.3	.0421
20	14.90	32.31	23.94	398.5	.0830
30	12.85	32.40	24.43	352.0	.1205
40	11.81	32.43	24.66	330.1	.1546
50	10.00	32.46	25.00	297.9	.1860
75	6.76	32.53	25.54	246.7	.2540
100	6.26	32.57	25.63	238.8	.3146
125	6.24	32.74	25.76	226.2	.3727
150	6.21	33.17	26.10	194.1	.4252
200	5.88	33.69	26.56	151.1	.5116
300	5.03	33.88	26.80	129.1	.6516
400	4.51	33.94	26.91	119.2	.7758
500	4.25	34.06	27.03	108.7	.8898
700	3.83	34.17	27.16	97.6	1.0962
900	3.48	34.27	27.28	87.2	1.2810

STATION A11: 48°41'N 129°34'W 1628 GMT August 13, 1951 Wire angle: 6°
 Depth of observation: 700 m. Weather: overcast Sea: 1-S-3 Wind: S-3

Depth	T	S	σ_t	$10^5 \delta$	$\Delta\rho$
(m)	(°C)	(‰)	(mg/cm ³)		(dyn.m.)
2	16.04	32.19	23.60	430.5	0000
10	16.01	32.15	23.58	432.7	.0432
20	14.53	32.12	23.88	404.2	.0850
30	11.80	32.21	24.49	346.2	.1245
40	9.38	32.26	24.93	304.3	.1570
50	8.45	32.36	25.16	282.4	.1864
75	6.97	32.50	25.48	252.2	.2532
100	6.36	32.58	25.62	239.1	.3146
125	6.78	33.08	25.96	207.3	.3704
150	7.05	33.46	26.23	182.2	.4191
200	7.04	33.82	26.51	156.3	.5037
300	6.20	33.94	26.71	138.4	.6511
400	5.40	34.00	26.85	125.8	.7832
500	5.02	34.05	26.94	118.0	.9051
700	4.31	34.22	27.15	99.4	1.1225

STATION A12: 48°44'N 128°22'W August 13, 1951 2225 GMT Wire angle: 6°
 Depth of observation: 900 m. Weather: overcast Sea: 0-SSW-2 Wind: SSE-3

2	15.91	32.12	23.58	432.4	0000
10	15.9	32.10	23.56	434.6	.0434
20	15.55	32.14	23.67	424.3	.0863
30	13.57	32.12	24.07	386.1	.1268
40	10.80	32.24	24.68	328.2	.1654
50	9.76	32.31	24.92	305.5	.1971
75	7.07	32.48	25.46	254.1	.2670
100	6.47	32.55	25.58	242.9	.3291
125	6.84	33.14	26.00	203.5	.3849
150	6.92	33.58	26.34	171.7	.4318
200	6.71	33.86	26.58	149.6	.5121
300	5.98	33.96	26.75	134.5	.6541
400	5.50	34.03	26.87	124.0	.7833
500	5.20	34.06	26.93	119.2	.9049
700	4.22	34.17	27.12	102.0	1.1261
900	3.68	34.27	27.26	89.5	1.3177

STATION A13: 46°38'N 127°10'W August 14, 1951 0425 GMT Wire angle:
 2° Depth of observation: 900 m. Weather: Cloudy Sea: 1-SE-2 Wind: SE-3

Depth	T	S	σ_t	$10^5 \delta$	$\Delta\rho$
(m)	(°C)	(‰)	(mg/cm ³)		(dyn.m.)
2	16.55	32.12	23.44	445.8	0000
10	16.5	32.12	23.44	446.1	.0446
20	14.85	32.19	23.86	406.1	.0872
30	9.26	32.31	25.00	297.5	.1224
40	7.99	32.46	25.31	267.9	.1507
50	7.21	32.46	25.42	257.6	.1769
75	7.03	32.76	25.67	234.3	.2384
100	7.08	33.29	26.09	194.6	.2932
125	7.16	33.64	26.36	169.5	.3387
150	7.17	33.79	26.48	158.4	.3797
200	6.66	33.81	26.63	144.9	.4555
300	5.82	33.94	26.76	133.3	.5946
400	5.22	34.03	26.90	121.0	.7218
500	5.17	34.05	26.93	119.1	.8418
700	4.61	34.13	27.04	110.1	1.0710
900	4.10	34.25	27.20	95.9	1.2770

STATION A14: 46°36'N 125°57'W August 14, 1951 1011 GMT Wire angle:
 0° Sounding: 53 fm. Depth of observation: 100 m. Weather: Cloudy
 Sea: 0-0 Wind: 0

2	13.06	32.28	24.28	365.5	0000
10	8.02	32.43	25.28	270.5	.0318
20	7.16	32.52	25.48	251.5	.0579
30	6.76	32.67	25.64	236.5	.0823
40	6.65	32.72	25.70	230.8	.1057
50	6.67	32.96	25.80	221.5	.1283
75	6.99	33.50	26.26	178.2	.1782
100	6.81	33.76	26.49	156.7	.2201

STATION A15: 48°32.5'N 124°57.5'W August 14, 1951 1612 GMT Wire angle:
 0° Sounding: 35 fm. Depth of observation: 50 m. Weather: Cloudy Sea:
 0-0 Wind: 0

Depth	T	S	σ_t	$10^5 \delta$	Δp
(m)	(°C)	(‰)	(mg/cm ³)		(dyn.m.)
2	11.39	31.17	23.76	415.2	0000
10	9.56	31.90	24.62	333.4	.0374
20	8.78	32.67	25.36	263.0	.0672
30	8.67	32.88	25.54	246.1	.0927
40	7.92	33.10	25.82	219.6	.1160
50	7.20	33.52	26.26	177.9	.1359

STATION A16: 48°30.5'N 124°44'W August 14, 1951 1731 GMT Wire angle:
 0° Sounding: 120 fm. Depth of observation: 150 m. Weather: Overcast
 Sea: 0-0 Wind: 0

2	11.18	31.19	23.81	410.4	0000
10	11.1	31.29	23.90	401.9	.0406
20	9.93	31.76	24.46	348.7	.0782
30	9.16	32.17	24.90	307.0	.1109
40	8.61	32.53	25.28	270.9	.1398
50	8.50	32.80	25.34	265.4	.1666
75	7.47	33.50	26.20	184.0	.2228
100	7.12	33.64	26.36	169.1	.2670
125	6.97	33.76	26.47	159.1	.3080
150	6.90	33.84	26.54	152.7	.3470

