

## Oceanographical Data of the Fourth Japanese Antarctic Research Expedition

Shigeru FUKASE\*

### 第4次日本南極地域観測海洋資料

深 瀬 茂\*

要 旨

内容を略述し、観測データを表示した。

第4次南極地域観測隊海洋部門の実施した観測

### Oceanographical Section

Observation ship	SOYA (Captain—Sueichiro AKITA)
Observer	Tetsuya TORII <sup>1)</sup> , Shigeru FUKASE, Yoshio SUZUKI <sup>2)</sup> , Yoshio YOSHIDA <sup>3)</sup> , Yozo MATSUMOTO <sup>4)</sup> , Takashi MIYAHARA <sup>5)</sup> .
Analyst	Sadao MURATA <sup>6)</sup> (Chlorinity) S. FUKASE (pH, Phosphate, Silicate, Ammonia-Nitrogen, Nitrite-Nitrogen, Nitrate-Nitrogen, Dissolved Oxygen) Y. YOSHIDA (Dissolved Oxygen)

The summary of the observations made from November 1, 1959 to April 21, 1960, has been reported in the "National Report of the Japanese Antarctic Research Expeditions, 1958-60".

The data of water temperature, salinity, pH, dissolved oxygen, phosphate, silicate, ammonia nitrogen, nitrite nitrogen and nitrate nitrogen are given here, but not those of total carbonates in sea water, water temperature measured with bathythermograph, plankton and bottom sediments.

The sea water samples and other materials have been furnished to each specialist have various data as well as reports of researches are expected to be published before long.

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- 3) Department of Geography, Faculty of Science, Tokyo Metropolitan University, Member of the J. A. R. E., 1957-58 and member of the Wintering Party of the J. A. R. E., 1959-61.
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Table 1. Oceanographical data of the fourth Antarctic Expedition (surface observation)

Station	Date	Time		Location		Temp. °C	pH	Cl ‰	S ‰	O <sub>2</sub> cc/L	P μg-a./L	Si μg-a./L	NH <sub>3</sub> -N μg-a./L	NO <sub>2</sub> -N μg-a./L	NO <sub>3</sub> -N μg-a./L
		GMT	SAT	Lat.	Long.										
1	59-11-1	23-00	(2) 08-00	32-37N	133-06E	25.1	—	19.22	34.72	—	—	—	—	—	—
2	11-2	23-00	(3) 08-00	29-29N	130-52E	25.4	—	19.26	34.79	—	—	—	—	—	—
3	11-3	01-00	10-00	29-15N	130-42E	25.4	—	—	—	—	—	—	—	—	—
4	11-3	22-30	(4) 07-30	26-20N	128-16E	25.4	—	19.23	34.74	—	—	—	—	—	—
5	11-4	01-27	10-15	25-57N	127-53E	26.1	—	—	—	—	—	—	—	—	—
6	11-4	23-42	(5) 08-30	23-13N	125-09E	27.4	—	19.26	34.79	—	—	—	—	—	—
7	11-5	04-34	13-10	22-35N	124-34E	27.2	—	—	—	—	—	—	—	—	—
8	11-5	09-00	17-36	21-58N	123-58E	27.0	—	19.29	34.85	—	—	—	—	—	—
9	11-6	04-40	13-04	19-28N	120-45E	27.5	—	—	—	—	—	—	—	—	—
10	11-6	09-00	17-24	18-59N	120-32E	27.6	—	18.81	33.98	—	—	—	—	—	—
11	11-7	04-52	13-01	16-27N	117-51E	28.3	—	—	—	—	—	—	—	—	—
12	11-7	05-51	14-00	16-19N	117-42E	28.3	8.26	—	—	—	3	—	0.15	—	—
13	11-7	08-59	17-08	15-55N	117-17E	28.4	—	18.61	33.62	—	—	—	—	—	—
14	11-8	05-56	13-03	13-14N	114-34E	28.4	—	—	—	—	—	—	—	—	—
15	11-8	06-03	14-00	13-09N	114-27E	28.6	8.26	—	—	—	0.2	4	tr.	—	—
16	11-8	09-00	16-57	12-45N	114-04E	28.6	—	18.24	32.95	—	—	—	tr.	—	—
17	11-9	05-21	13-03	10-02N	111-23E	28.0	—	—	—	—	—	—	—	—	—
18	11-9	06-20	14-02	9-54N	111-15E	28.4	8.27	—	—	—	tr.	2	0	0	0
19	11-9	09-00	16-42	9-33N	110-54E	28.5	—	18.28	33.03	—	—	—	—	—	—
20	11-10	05-35	13-05	6-50N	108-21E	29.2	—	—	—	—	—	—	—	—	—
21	11-10	05-51	13-21	6-47N	108-12E	29.4	8.25	—	—	—	0.1	3	tr.	0	0
22	11-10	09-10	16-40	6-23N	107-53E	28.4	—	18.41	33.26	—	—	—	tr.	—	tr.
23	11-11	06-30	14-00	3-32N	105-38E	29.6	8.23	—	—	—	0.1	4	tr.	tr.	tr.
24	11-11	09-00	16-30	3-09N	105-23E	29.6	—	18.27	33.01	—	—	—	—	—	—
25	11-19	06-05	13-05	3-53N	99-41E	28.8	—	—	—	—	—	—	—	—	—
26	11-19	07-00	14-00	3-59N	99-33E	28.9	8.27	16.99	30.70	4.64	0.1	4	2	0.07	tr.
27	11-19	09-00	16-00	4-12N	99-17.5E	29.4	—	17.36	31.37	—	—	—	—	—	—
28	11-20	06-26	13-05	5-56N	95-50E	28.6	—	—	—	—	—	—	—	—	—
29	11-20	07-21	14-00	5-57N	95-41E	28.7	8.23	18.22	32.92	4.55	0.3	—	tr.	0	0
30	11-20	09-00	15-39	6-00N	95-24E	28.7	—	18.13	32.76	—	—	—	—	—	—
31	11-21	06-41	13-05	4-17N	92-21E	28.4	—	—	—	—	—	—	—	—	—
32	11-21	07-36	14-00	4-12N	92-19E	28.6	8.22	18.78	33.93	4.41	0.2	3	1	0	0
33	11-22	06-51	13-02	1-56N	89-17E	28.0	—	—	—	—	—	—	—	—	—
34	11-22	07-48	14-00	1-51N	89-11E	28.2	8.22	19.58	35.37	4.53	0.3	2	1	0.04	0
35	11-23	07-03	13-03	0-26S	86-31E	27.8	—	—	—	—	—	—	—	—	—
36	11-23	07-23	13-23	0-29S	86-29E	27.9	8.23	19.63	35.46	4.54	0.3	1	2	0.05	0
37	11-24	07-17	13-05	3-03S	83-39E	27.7	—	—	—	—	—	—	—	—	—
38	11-24	08-12	14-00	3-08S	83-34E	27.8	8.20	19.44	35.12	4.58	0.3	3	—	0	0
39	11-25	07-29	13-05	5-02S	80-38E	27.8	—	—	—	—	—	—	—	—	—

Station	Date	Time		Location		Temp. °C	pH	Cl ‰	S ‰	O <sub>2</sub> cc/L	P μg-a./L	Si μg-a./L	NH <sub>3</sub> -N μg-a./L	NO <sub>2</sub> -N μg-a./L	NO <sub>3</sub> -N μg-a./L
		GMT	SAT	Lat.	Long.										
40	59-11-25	08-24	14-00	5-06 S	80-30 E	28.0	8.23	18.88	34.11	4.62	0.1	2	1	tr.	0
41	11-26	07-40	13-04	7-15 S	76-55 E	29.1	—	—	—	—	—	—	—	—	—
42	11-26	08-10	13-34	7-18 S	76-51 E	29.1	8.25	19.26	34.79	4.54	0.3	3	1	tr.	tr.
43	11-26	12-30	17-54	7-44 S	76-14 E	29.0	—	—	—	—	—	—	—	—	—
44	11-27	08-00	13-06	9-46 S	73-22 E	28.3	8.31	19.37	34.99	4.52	0.3	2	tr.	tr.	tr.
45	11-28	08-15	13-06	12-04 S	69-55 E	27.6	8.19	19.30	34.87	4.56	0.3	3	0	tr.	0
46	11-29	08-30	13-09	14-22 S	66-22 E	27.1	8.22	19.39	35.05	4.62	0.4	3	1	tr.	0
47	11-30	08-40	13-04	17-16 S	63-13 E	26.8	8.22	19.35	34.96	4.55	0.4	3	7	tr.	0
48	12-1	09-00	13-12	20-08 S	59-49 E	25.2	8.27	19.55	35.32	4.76	0.2	3	2	tr.	0
49	12-2	08-50	12-44	21-56 S	55-43 E	24.8	8.26	19.50	35.23	4.82	0.2	4	7	0	0
50	12-3	09-30	13-06	23-45 S	51-48 E	25.4	8.29	19.51	35.25	4.84	0.2	3	5	0	0
51	12-4	09-45	13-06	25-37 S	47-51 E	24.9	8.23	19.50	35.23	4.80	0.2	4	5	0	0
52	12-5	10-00	13-06	27-39 S	43-21 E	24.6	8.29	19.47	35.17	4.92	0.3	4	5	0.02	0
53	12-6	10-20	13-05	28-24 S	38-16 E	23.8	8.26	19.49	35.21	4.97	0.3	3	8	tr.	0
54	12-7	10-40	13-04	29-37 S	33-36 E	22.9	8.29	19.59	35.39	5.06	0.2	3	3	tr.	0
55	12-8	11-00	13-06	32-20 S	29-06 E	24.2	8.25	19.61	35.43	4.97	0.2	2	4	0.01	0
56	12-9	11-06	13-06	34-24 S	24-39 E	19.5	8.25	19.54	35.30	6.07	0.2	1	10	tr.	0
57	12-10	11-07	13-07	34-58 S	19-54 E	19.2	8.20	19.62	35.44	5.47	0.1	5	6	tr.	0
58	12-18	11-10	13-10	34-11 S	18-18 E	18.8	8.30	19.55	35.32	5.46	1.0	1	8	tr.	0
59	12-18	19-15	21-15	35-20 S	18-49 E	20.0	8.22	19.65	35.50	5.10	2.0	1	—	tr.	—
60	12-19	05-00	07-00	36-43 S	19-35 E	21.9	8.23	19.61	35.43	4.89	1.0	1	—	tr.	—
61	12-19	10-45	13-05	37-34 S	20-05 E	23.9	8.24	19.61	35.43	4.79	0.5	1	10	tr.	0
62	12-19	16-25	18-45	38-24 S	20-33 E	21.7	8.28	19.71	35.61	5.09	0.6	1	—	tr.	—
63	12-20	04-40	07-00	40-13 S	21-41 E	20.8	8.20	19.67	35.53	4.93	0.3	1	—	0.01	—
64	12-20	10-30	13-10	41-08 S	22-15 E	16.8	8.19	19.62	35.44	5.65	0.4	1	1	0.06	—
65	12-20	16-00	18-40	41-55 S	22-47 E	17.6	8.28	19.67	35.53	5.54	0.4	0	—	0.05	7.5
66	12-21	04-35	07-15	43-51 S	24-05 E	10.4	8.15	19.31	34.89	6.27	1.0	1	—	0.12	—
67	12-21	10-05	13-05	44-40 S	24-36 E	7.1	8.08	18.80	33.96	7.01	2.0	5	5	0.27	6.0
68	12-21	18-00	21-00	45-52 S	25-36 E	6.8	8.10	18.78	33.93	6.89	2.0	4	—	0.27	—
69	12-22	04-10	07-10	47-23 S	26-51 E	5.1	c.r. 8.05	18.77	33.91	7.09	2.0	5	—	0.27	—
70	12-22	10-10	13-10	48-17 S	27-36 E	3.9	// 8.05	18.76	33.89	7.51	2.3	8	2	0.25	7.5
71	12-22	17-50	20-50	49-28 S	28-42 E	4.8	// 8.05	18.77	33.91	7.13	2.0	5	—	0.24	—
72	12-23	04-15	07-15	51-05 S	30-12 E	2.1	// 8.05	18.76	33.89	7.60	2.3	16	—	0.25	—
73	12-23	10-10	13-10	51-57 S	31-06 E	1.0	// 8.05	18.80	33.96	7.75	2.2	30	3	0.24	8.5
74	12-23	15-00	18-00	52-40 S	31-49 E	1.4	// 8.05	18.83	34.02	7.65	1.9	25	—	0.28	—
75	12-24	04-10	07-10	54-33 S	33-48 E	1.7	// 8.05	18.82	34.00	7.51	2.3	26	—	0.23	—
76	12-24	10-00	13-00	55-23 S	34-42 E	1.7	// 8.05	18.82	34.00	7.55	2.2	23	3	0.27	11.5
77	12-24	18-15	21-15	56-39 S	35-41 E	1.5	// 8.05	18.84	34.04	7.61	2.2	26	—	0.25	—
78	12-25	04-20	07-20	58-08 S	37-15 E	1.0	// 8.00	18.82	34.00	7.73	2.8	35	—	0.27	—
79	12-25	10-05	13-05	58-58 S	38-18 E	1.2	// 8.00	18.83	34.02	7.83	2.4	33	1	0.25	12.4

Station	Date	Time		Location		Temp. °C	pH	Cl ‰	S ‰	O <sub>2</sub> cc/L	P μg-a./L	Si μg-a./L	NH <sub>3</sub> -N μg-a./L	NO <sub>2</sub> -N μg-a./L	NO <sub>3</sub> -N μg-a./L
		GMT	SAT	Lat.	Long.										
80	59-12-25	18-05	21-05	60-05 S	39-58 E	1.0	(c.r.)8.05	18.84	34.04	7.84	2.3	33	—	0.29	—
81	12-26	04-00	07-00	61-26 S	42-07 E	0.5	// 8.00	18.85	34.05	7.85	2.6	33	—	0.25	—
82	12-26	10-05	13-05	62-15 S	43-26 E	0.1	// 8.00	18.85	34.05	7.99	2.5	35	3	0.29	18.5
83	12-26	18-03	21-03	63-22 S	45-15 E	-0.1	// 8.00	18.90	34.15	7.79	2.8	43	—	0.28	—
84	12-27	04-07	07-07	64-45 S	47-37 E	-0.1	// 7.95	18.90	34.15	7.73	2.4	50	—	0.21	—
85	12-27	10-00	13-00	65-17 S	48-32 E	-1.8	// 8.00	18.47	33.37	7.72	3.0	50	0	0.16	16.0
86	12-27	18-20	21-20	65-28 S	46-55 E	-0.1	// 8.00	18.82	34.00	7.63	2.7	43	—	0.21	—
87	12-28	04-00	07-00	65-56 S	44-40 E	-1.1	// 8.00	18.63	33.66	7.81	2.6	50	—	0.23	—
88	12-28	10-05	13-05	66-13 S	43-07 E	-1.0	// 7.95	18.88	34.11	7.43	2.7	55	1	0.25	16.0
89	12-28	18-00	21-00	65-59 S	41-08 E	-1.1	// 8.00	18.93	34.20	7.69	—	50	—	0.32	—
90	12-29	04-00	07-00	66-01 S	37-13 E	-0.9	// 7.95	18.82	34.00	7.26	—	—	—	—	—
91	60-2-22	05-05	08-05	64-56 S	31-49 E	1.3	// 8.05	18.98	34.29	—	2.6	45	1	0.27	20.0
92	2-22	17-30	20-00	63-16 S	30-46 E	1.3	// 8.05	18.80	33.96	—	2.1	38	0	0.31	—
93	2-23	05-40	08-10	62-13 S	30-28 E	1.2	// 8.05	18.77	33.91	—	2.2	35	1	0.29	—
94	2-23	18-00	20-00	61-04 S	30-01 E	1.1	// 8.00	18.77	33.91	—	1.9	35	0	—	—
95	2-24	06-00	08-00	60-12 S	29-42 E	1.1	// 8.00	18.72	33.82	—	2.1	38	0	0.27	—
96	2-24	18-00	20-00	59-12 S	29-01 E	1.2	// 8.00	18.78	33.93	—	1.9	35	—	0.31	—
97	2-25	06-00	08-00	57-56 S	28-08 E	1.4	// 8.05	18.78	33.93	—	2.0	33	—	0.21	—
98	2-25	18-00	20-00	56-31 S	27-03 E	1.6	// 8.05	18.87	34.09	—	2.1	38	1	0.29	—
99	2-26	06-10	08-10	55-28 S	26-44 E	1.7	// 8.05	18.85	34.05	—	2.2	20	1	0.27	—
100	2-26	18-00	20-00	53-51 S	26-09 E	1.0	// 8.05	18.90	34.15	—	2.0	50	1	0.27	—
101	2-27	06-00	08-00	52-01 S	25-23 E	1.8	// 8.05	18.80	33.96	—	2.1	28	1	0.24	—
102	2-27	18-00	20-00	50-24 S	24-25 E	1.9	// 8.05	18.75	33.87	—	2.2	31	1	0.29	22.0
103	2-28	06-00	08-00	49-00 S	23-31 E	3.4	// 8.10	18.74	33.86	—	1.9	8	1	0.27	20.5
104	2-28	18-00	20-00	47-14 S	22-46 E	5.4	// 8.15	18.74	33.86	—	2.0	8	1	0.27	18.0
105	2-29	06-00	08-00	45-22 S	22-03 E	7.9	// 8.15	18.84	34.04	—	1.6	8	2	0.27	10.0
106	2-29	18-00	20-00	43-32 S	21-15 E	10.4	// 8.15	19.02	34.36	—	1.2	1	—	0.20	4.0
107	3-1	06-00	08-00	41-40 S	20-20 E	12.2	// 8.20	19.24	34.76	—	0.9	1	1	0.11	tr.
108	3-1	18-00	20-00	39-50 S	19-58 E	24.1	// 8.25	19.69	35.57	—	0	1	4	0	0
109	3-2	06-00	08-00	37-58 S	18-49 E	22.1	// 8.25	19.64	35.48	—	0	1	4	tr.	0
110	3-2	18-00	20-00	35-46 S	18-08 E	20.5	// 8.25	19.77	35.72	—	0.1	1	5	tr.	—
111	3-10	18-00	20-00	34-47 S	19-13 E	20.7	// 8.25	19.63	35.46	—	0.4	1	—	0.17	—
112	3-11	06-00	08-00	34-50 S	21-39 E	20.6	// 8.25	19.56	35.34	—	0.3	1	—	0.04	—
113	3-11	18-00	20-00	34-30 S	24-12 E	20.4	// 8.25	19.56	35.34	—	0.3	1	—	0.01	—
114	3-12	06-00	08-00	33-53 S	26-37 E	15.4	// 8.15	19.48	35.19	—	0.8	3	—	0.05	—
115	3-12	18-00	20-00	33-28 S	29-00 E	26.0	// 8.25	19.72	35.63	—	tr.	3	—	tr.	—
116	3-13	06-00	08-00	33-13 S	31-23 E	25.0	// 8.25	19.54	35.30	—	0.2	2	—	0	—
117	3-13	18-00	20-00	32-32 S	33-30 E	25.0	// 8.25	19.56	35.34	—	0.3	2	—	tr.	—
118	3-14	06-00	08-00	31-37 S	35-32 E	25.0	// 8.25	19.68	35.55	—	tr.	4	—	tr.	—

Station	Date	Time		Location		Temp. °C	pH	Cl ‰	S ‰	O <sub>2</sub> cc/L	P μg-a./L	Si μg-a./L	NH <sub>3</sub> -N μg-a./L	NO <sub>2</sub> -N μg-a./L	NO <sub>3</sub> -N μg-a./L
		GMT	SAT	Lat.	Long.										
119	60-3-14	17-45	20-00	30-42 S	37-27 E	24.8	(c.r.)8.30	19.59	35.39	—	0.2	2	—	tr.	—
120	3-15	05-45	08-00	29-50 S	39-45 E	24.0	// 8.25	19.77	35.72	—	tr.	5	—	0.01	—
121	3-15	17-27	20-00	29-15 S	40-36 E	25.6	// 8.25	19.66	35.52	—	0.2	1	—	tr.	—
122	3-16	05-27	08-00	28-33 S	42-14 E	25.3	// 8.25	19.43	35.10	—	0.2	3	—	0.05	—
123	3-16	18-03	20-45	27-27 S	43-47 E	25.0	// 8.25	19.51	35.25	—	0.1	1	—	0.05	—
124	3-17	05-18	08-00	26-19 S	45-16 E	23.3	// 8.20	19.50	35.23	—	0.2	2	—	0.05	—
125	3-17	17-06	20-00	25-31 S	47-01 E	21.9	// 8.25	19.58	35.37	—	0.2	1	—	0.1	—
126	3-18	05-06	08-00	24-48 S	48-52 E	27.0	// 8.25	19.47	35.17	—	0.2	1	—	0.07	—
127	3-18	16-51	20-00	24-04 S	50-41 E	26.4	// 8.25	19.42	35.08	—	0.2	3	—	0.09	—
128	3-19	05-01	08-00	23-16 S	52-33 E	26.5	// 8.25	19.22	34.72	—	0.1	1	—	0.02	—
129	3-19	16-36	20-00	22-23 S	54-26 E	27.5	// 8.25	19.43	35.10	—	0.2	2	—	0.01	—
130	3-20	04-36	08-00	21-29 S	56-18 E	26.2	// 8.25	19.50	35.23	—	tr.	2	—	tr.	—
131	3-20	16-21	20-00	20-35 S	58-10 E	26.8	// 8.25	19.24	34.76	—	0.1	1	—	tr.	—
133	3-21	04-21	08-00	19-24 S	59-56 E	27.4	// 8.25	19.28	34.83	—	0.2	1	—	0	—
133	3-21	16-06	20-00	18-10 S	61-39 E	27.8	// 8.30	19.17	34.63	—	0.2	0	—	tr.	—
134	3-22	04-06	08-00	16-54 S	63-20 E	28.2	// 8.25	19.19	34.67	—	0.2	2	—	tr.	—
135	3-22	15-51	20-00	15-42 S	65-38 E	28.2	// 8.25	19.27	34.81	—	tr.	2	—	0.01	—
136	3-23	03-51	08-00	14-26 S	66-33 E	28.2	// 8.25	19.17	34.63	—	0.2	1	—	tr.	—
137	3-23	15-24	20-00	13-05 S	68-17 E	29.0	// 8.25	19.12	34.54	—	0.2	2	—	0	—
138	3-24	03-36	08-00	11-48 S	69-57 E	28.3	// 8.25	19.24	34.76	—	0.3	2	—	tr.	—
139	3-24	15-24	20-00	10-38 S	71-38 E	29.0	// 8.30	18.93	34.20	—	0.2	5	—	tr.	—
140	3-25	03-24	08-00	09-32 S	73-21 E	28.5	// 8.30	18.63	33.66	—	—	—	—	tr.	—
141	3-25	15-09	20-00	08-27 S	75-00 E	29.8	// 8.25	18.80	33.96	—	0.2	5	—	tr.	—
142	3-26	03-09	08-00	07-21 S	76-40 E	29.0	// 8.30	18.93	34.20	—	0.2	3	—	tr.	—
143	3-26	14-57	20-00	06-12 S	73-30 E	29.2	// 8.25	19.04	34.40	—	0.1	4	—	tr.	—
144	3-27	02-57	08-00	05-02 S	80-24 E	29.1	// 8.25	18.90	34.15	—	0.2	3	—	0	—
145	3-27	14-57	20-15	03-43 S	82-12 E	29.2	// 8.25	19.15	34.60	—	0.2	3	—	tr.	—
146	3-28	02-42	08-00	02-20 S	83-57 E	29.0	// 8.30	18.96	34.25	—	0.2	2	—	tr.	—
147	3-28	14-27	20-00	00-56 S	85-40 E	29.4	// 8.30	19.21	34.70	—	0.9	3	—	0.04	—
148	3-29	02-27	08-00	00-36 S	87-24 E	29.5	// 8.25	19.19	34.67	—	0.6	3	—	0.02	—
149	3-29	14-12	20-00	01-52 N	88-59 E	29.2	// 8.25	19.04	34.40	—	0.4	3	—	0.01	—
150	3-30	02-12	08-00	03-03 N	91-06 E	29.4	// 8.30	18.68	33.75	—	0.5	5	—	0.1	—
151	3-30	13-57	20-00	04-18 N	92-51 E	29.9	// 8.25	19.24	34.76	—	0.5	4	—	0.02	—
152	3-31	01-57	08-00	05-29 N	94-31 E	29.2	// 8.30	18.33	33.12	—	0.3	3	—	tr.	—
153	3-31	13-42	20-00	05-45 N	96-16 E	29.5	// 8.30	18.10	32.70	—	0.2	3	—	tr.	—
154	4-1	01-42	08-00	04-54 N	98-15 E	29.3	// 8.25	17.90	32.34	—	0.2	4	—	tr.	—
155	4-1	13-06	20-00	03-34 N	100-08 E	29.4	// 8.25	17.78	32.12	—	0.2	3	—	0.01	—
156	4-2	01-06	08-00	02-24 N	101-41 E	29.4	// 8.20	17.31	31.28	—	0.3	7	—	0.08	—
157	4-7	12-30	20-00	01-21 N	104-20 E	27.4	// 8.25	18.04	32.59	—	0.4	4	—	0.19	—

Station	Date	Time		Location		Temp. °C	pH	Cl ‰	S ‰	O <sub>2</sub> cc/L	P μg-a./L	Si μg-a./L	NH <sub>3</sub> -N μg-a./L	NO <sub>2</sub> -N μg-a./L	NO <sub>3</sub> -N μg-a./L
		GMT	SAT	Lat.	Long.										
158	60-4-8	00-30	08-00	02-48N	105-19E	27.8	(c.r.)8.25	18.63	33.66	—	0.2	4	—	0.04	—
159	4-8	12-30	20-00	04-18N	106-31E	29.4	// 8.25	18.49	33.40	—	0.2	5	—	0.02	—
160	4-9	00-30	08-00	05-45N	107-45E	28.6	// 8.30	18.56	33.53	—	0.2	6	—	0.01	—
161	4-9	12-30	20-00	07-16N	108-58E	28.8	// 8.30	18.60	33.60	—	tr.	2	—	tr.	—
162	4-10	00-30	08-00	08-49N	110-11E	28.2	// 8.30	18.62	33.64	—	tr.	5	—	0	—
163	4-10	12-30	20-00	10-23N	111-30E	28.6	// 8.30	18.62	33.64	—	0.3	3	—	0	—
164	4-11	00-30	08-00	11-54N	112-47E	28.2	// 8.25	18.69	33.77	—	0	3	—	0	—
165	4-11	12-30	20-00	13-26N	114-15E	28.2	// 8.25	18.63	33.66	—	0	3	—	0	—
166	4-12	00-30	08-00	14-56N	115-41E	28.2	// 8.25	18.80	33.96	—	0.2	3	—	0	—
167	4-12	12-18	20-00	16-12N	116-57E	28.6	// 8.25	18.75	33.87	—	0.2	2	—	0.01	—
168	4-13	00-18	08-00	17-42N	118-26E	27.2	// 8.20	19.00	34.33	—	0.2	3	—	tr.	—
169	4-13	12-06	20-00	19-21N	119-57E	27.6	// 8.20	18.98	34.29	—	0.2	3	—	tr.	—
170	4-14	00-06	08-00	21-01N	121-28E	26.8	// 8.30	19.21	34.70	—	0.2	3	—	0	—
171	4-14	12-00	20-00	22-21N	123-04E	26.4	// 8.30	19.35	34.96	—	0.2	3	—	0	—
172	4-15	00-00	08-00	23-47N	124-43E	24.3	// 8.25	19.33	34.92	—	tr.	1	—	0	—
173	4-15	11-30	20-00	24-55N	126-13E	24.0	// 8.25	19.33	34.92	—	0	1	—	0	—
174	4-15	23-30	(16)08-00	25-53N	127-22E	21.5	// 8.25	19.41	35.07	—	0	1	—	0	—
175	4-18	11-00	20-00	26-38N	127-28E	21.4	—	19.40	35.05	—	—	—	—	—	—
176	4-18	23-00	(19)08-00	28-31N	128-21E	21.0	—	19.37	34.99	—	—	—	—	—	—
177	4-19	11-00	20-00	30-09N	129-32E	22.3	—	19.31	34.89	—	—	—	—	—	—
178	4-19	23-00	(20)08-00	31-17N	131-30E	18.6	—	19.20	34.69	—	—	—	—	—	—
179	4-20	11-00	20-00	32-36N	133-28E	17.9	—	19.38	35.01	—	—	—	—	—	—
180	4-20	23-00	(21)08-00	33-16N	135-18E	18.2	—	19.25	34.78	—	—	—	—	—	—
181	4-21	11-00	20-00	34-08N	137-17E	17.7	—	19.32	34.90	—	—	—	—	—	—
182	4-21	23-00	(22)08-00	34-25N	138-48E	17.0	—	19.27	34.81	—	—	—	—	—	—

Table 2. Oceanographical data of the fourth Antarctic Expedition.

(serial observation)

## Station 1

Date 11, Jan., 1960

Time (GMT) 0740-1200

Lat. 66°42'S

Long. 38°06'E

Bottom depth 4400 m

Transp. —

Sea Color —

Depth	Temp. °C	Cl ‰	S ‰	$\sigma_t$	O <sub>2</sub> cc/L	O <sub>2</sub> /O <sub>2</sub> ' %	pH	P μg-a./L	Si μg-a./L	NO <sub>2</sub> -N μg-a./L	NO <sub>3</sub> -N μg-a./L
0	-1.6	18.78	33.93	27.32	7.02	83	7.95	3.2	53	0.29	18.0
10	-1.81	18.85	34.05	27.43	6.94	82	8.00	3.2	56	0.27	17.0
20	-1.84	18.78	33.93	27.33	6.85	81	8.00	3.0	48	0.21	17.5
30	-1.87	18.89	34.13	27.49	6.70	79	8.00	2.5	53	0.27	20.0
50	-1.82	18.99	34.31	27.63	6.13	72	8.00	2.6	59	0.14	17.0
75	-1.78	19.03	34.38	27.69	6.52	77	7.95	2.8	59	0.17	16.0
100	-1.25	19.06	34.43	27.72	6.14	74	8.00	2.6	63	0	15.0
150	+0.78	19.17	34.63	27.79	4.73	60	8.00	2.6	72	0	17.0
200	1.02	19.19	34.67	27.80	4.45	57	7.95	2.4	72	0	16.0
250	1.36	19.19	34.67	27.78	4.34	56	7.90	2.8	77	0	16.0
300	1.43	19.20	34.69	27.79	4.36	56	7.90	3.2	77	0	15.0
400	1.34	19.19	34.67	27.78	4.38	56	7.90	3.2	72	0	15.0
500	1.26	—	—	—	4.68	—	—	—	—	—	—
600	1.16	19.19	34.67	27.79	4.44	57	7.90	2.5	77	0	18.5
800	0.95	19.19	34.67	27.80	4.50	57	8.00	2.5	77	0	17.0
1000	0.78	19.20	34.69	27.82	4.60	58	8.05	2.6	77	0	16.5
1200	0.61	19.20	34.69	27.83	4.82	61	8.00	2.6	83	0	17.0
1500	0.43	19.19	34.67	27.83	4.62	58	7.90	3.0	91	0	18.0

## Station 2

Date 12, Jan., 1960

Time (GMT) 0905-1500

Lat. 66°25'S

Long. 37°44'E

Bottom depth 4650 m

Transp. 34 m

Sea Color 2

Depth	Temp. °C	Cl ‰	S ‰	$\sigma_t$	O <sub>2</sub> cc/L	O <sub>2</sub> /O <sub>2</sub> ' %	pH	P μg-a./L	Si μg-a./L	NO <sub>2</sub> -N μg-a./L	NO <sub>3</sub> -N μg-a./L
0	-1.0	18.72	33.82	27.22	7.24	87	8.10	4.3	50	0.36	—
13	-1.70	18.73	33.84	27.26	7.21	85	8.00	2.5	50	0.28	—
22	-1.79	18.82	34.00	27.39	66.6	79	8.00	2.6	50	0.28	—
32	-1.84	18.96	34.25	27.59	6.69	79	8.00	2.7	53	0.28	—
52	-1.79	18.99	34.31	27.63	6.68	79	8.00	2.5	56	—	—
76	-1.73	19.03	34.38	27.69	6.64	79	8.00	2.6	56	—	—
101	-0.06	19.11	34.52	27.74	5.48	68	8.00	3.0	63	—	—
151	+0.88	19.17	34.63	27.78	4.66	59	7.90	3.3	72	—	—
200	1.13	19.19	34.67	27.79	4.50	57	7.90	3.0	77	—	—
254	1.38	19.19	34.67	27.76	4.42	57	7.90	3.0	83	—	—
302	1.42	19.19	34.67	27.78	4.46	57	7.90	3.3	83	—	—
398	1.34	19.21	34.70	27.79	4.47	57	7.90	2.7	83	—	—
495	1.23	19.21	34.70	27.81	4.52	58	8.10	2.6	72	—	—
593	1.17	19.21	34.70	27.81	4.60	59	8.10	2.6	72	—	—
792	0.92	19.20	34.69	27.82	4.65	59	8.10	2.7	83	—	—
998	0.75	19.19	34.67	27.81	4.64	59	8.00	2.4	83	—	—

## Station 3

Date 13, Jan., 1960

Time (GMT) 0600-1326

Lat. 66°14'S

Long. 33°54'E

Bottom depth 1360 m

Transp. 25 m

Sea Color 2

Depth	Temp. °C	Cl ‰	S ‰	$\sigma_t$	O <sub>2</sub> cc/L	O <sub>2</sub> /O <sub>2</sub> ' %	pH	P $\mu\text{g-a./L}$	Si $\mu\text{g-a./L}$	NO <sub>2</sub> -N $\mu\text{g-a./L}$	NO <sub>3</sub> -N $\mu\text{g-a./L}$
0	-1.2	18.51	33.34	26.92	6.25	74	8.00	3.1	53	1.30	22.0
10	-1.60	18.62	33.64	27.09	7.65	90	8.00	2.4	48	2.70	—
20	-1.70	18.92	34.18	27.52	7.50	89	8.00	2.4	48	0.90	—
30	-1.81	18.94	34.22	27.57	7.42	88	8.00	2.4	50	1.60	—
50	-1.81	18.98	34.29	27.62	7.01	83	7.95	2.6	48	0.90	22.0
75	-1.82	18.96	34.25	27.59	7.21	85	7.90	2.6	50	2.90	—
100	-1.82	18.99	34.31	27.64	7.10	84	7.90	2.6	56	—	21.0
150	-1.76	19.03	34.38	27.69	6.71	79	7.90	2.6	53	tr.	—
200	-1.56	19.04	34.40	27.70	6.53	78	7.90	2.7	56	0	22.0
250	—	19.14	34.58	—	5.17	—	7.90	2.7	56	0	—
313	+1.10	19.18	34.65	27.78	4.67	60	7.95	2.7	63	—	21.5
411	—	19.19	34.67	—	4.95	—	7.95	2.7	63	—	22.5
509	0.94	19.20	34.69	27.82	4.67	59	8.10	2.6	63	—	22.0
607	0.68	19.21	34.70	27.85	4.75	60	8.10	2.6	67	—	21.0
802	0.38	19.19	34.67	27.83	4.95	62	8.00	2.7	72	—	22.0
998	0.41	19.19	34.67	27.82	4.68	59	8.00	2.9	77	—	21.0
1194	0.21	19.19	34.67	27.85	4.95	62	8.00	3.0	83	—	20.0

## Station 4

Date 15, Jan., 1960

Time (GMT) 0920-1130

Lat. 66°25'S

Long. 28°03'E

Bottom depth 4650 m

Transp. 22 m

Sea Color 3

Depth	Temp. °C	Cl ‰	S ‰	$\sigma_t$	O <sub>2</sub> cc/L	O <sub>2</sub> /O <sub>2</sub> ' %	pH	P $\mu\text{g-a./L}$	Si $\mu\text{g-a./L}$	NO <sub>2</sub> -N $\mu\text{g-a./L}$	NO <sub>3</sub> -N $\mu\text{g-a./L}$
0	-1.2	18.78	33.93	27.31	7.38	88	7.95	2.8	50	0.32	—
11	-1.33	18.73	33.84	27.23	7.30	87	8.00	2.4	48	0.32	—
20	-1.36	18.73	33.84	27.24	7.40	88	8.00	2.4	48	0.29	—
29	-1.74	18.92	34.18	27.52	6.81	81	7.90	2.4	48	0.31	—
48	-1.81	18.99	34.31	27.63	6.63	78	7.95	2.4	48	0.27	—
71	-1.82	19.01	34.34	27.67	6.67	79	7.90	2.4	48	0.40	—
—	—	—	—	—	—	—	—	—	—	—	—
140	-1.23	19.00	34.33	27.62	6.65	80	8.05	2.4	48	0.29	—
156	—	19.04	34.40	—	6.38	—	8.05	2.4	53	0.16	—
232	+0.65	19.18	34.65	27.81	4.70	59	7.90	2.4	67	0	—
278	1.18	19.19	34.67	27.79	4.47	57	7.95	2.4	67	0	—
370	1.33	19.20	34.69	27.79	4.47	57	7.95	2.4	67	—	—
469	—	19.21	34.70	—	4.51	—	7.95	2.2	72	—	—
569	1.20	19.21	34.70	27.81	4.52	58	7.95	2.2	77	—	—
767	0.97	19.21	34.70	27.82	4.79	61	7.95	2.4	77	—	—
965	0.78	19.20	34.69	27.82	4.55	58	7.95	2.4	83	—	—
1163	0.61	19.20	34.69	27.83	4.60	58	8.05	2.4	83	—	—
1460	0.46	19.19	34.67	27.83	4.69	59	8.05	2.4	91	—	—

Station 5  
 Date 21, Jan., 1960      Time (GMT) 1050-1300  
 Lat. 66°38'S      Long. 45°15'E      Bottom depth 3300 m  
 Transp. —      Sea Color 3

Depth	Temp. °C	Cl ‰	S ‰	$\sigma_t$	O <sub>2</sub> cc/L	O <sub>2</sub> /O <sub>2</sub> ' %	pH	P μg-a./L	Si μg-a./L	NO <sub>2</sub> -N μg-a./L	NO <sub>3</sub> -N μg-a./L
0	-1.4	18.47	33.37	26.87	7.56	89	7.95	3.5	50	0.20	24.0
11	-1.48	18.47	33.37	26.88	7.43	88	7.95	2.9	50	0.20	—
19	-1.48	18.49	33.40	26.90	7.45	88	8.00	2.5	50	0.20	24.0
28	—	18.58	33.57	—	7.58	—	8.00	2.5	50	0.20	—
45	-1.68	18.93	34.20	27.54	6.66	79	8.00	2.7	50	0.15	24.0
67	-1.78	18.94	34.22	27.57	6.92	82	7.90	2.5	50	0.15	—
87	-1.79	18.96	34.25	27.59	7.01	83	8.00	2.7	50	0.03	22.0
130	—	18.97	34.27	—	7.05	—	7.95	2.9	48	tr.	—
173	-1.80	18.99	34.31	27.63	6.85	81	7.95	2.9	53	0	23.5
216	-1.58	19.01	34.34	27.66	7.02	83	7.95	2.5	53	0	—
228	—	19.04	34.40	—	6.63	—	8.00	2.4	53	0	24.0
297	-1.13	19.04	34.40	27.69	6.49	78	8.00	2.0	53	0	23.5
338	+1.00	19.19	34.67	27.80	4.59	58	7.95	2.4	67	0	—
407	1.03	19.19	34.67	27.79	4.66	59	7.95	2.4	67	0	24.0
574	0.96	19.20	34.69	27.81	4.55	58	7.95	2.5	72	0	24.5
750	0.76	19.19	34.67	27.81	4.56	58	8.05	2.4	77	0	24.5
947	0.54	19.19	34.67	27.82	4.64	58	8.10	2.4	84	—	22.0
1247	0.29	19.19	34.67	27.84	4.80	60	7.95	2.5	91	—	21.0

Station 6  
 Date 22, Jan., 1960      Time (GMT) 0630-1200  
 Lat. 66°17'S      Long. 45°57'E      Bottom depth 2800 m  
 Transp. 18 m      Sea Color 4

Depth	Temp. °C	Cl ‰	S ‰	$\sigma_t$	O <sub>2</sub> cc/L	O <sub>2</sub> /O <sub>2</sub> ' %	pH	P μg-a./L	Si μg-a./L	NO <sub>2</sub> -N μg-a./L	NO <sub>3</sub> -N μg-a./L
0	-1.7	18.50	33.42	26.42	7.74	91	8.00	3.8	43	0.20	—
10	-1.74	18.49	33.40	26.41	7.64	90	8.05	—	—	0.20	—
20	-1.79	18.55	33.51	27.00	7.63	90	8.05	2.4	43	0.20	—
30	—	18.84	33.96	—	7.19	—	8.00	—	—	0.20	—
50	-1.78	18.93	34.20	27.55	7.03	83	8.00	2.7	45	0.20	—
75	-1.84	18.95	34.24	27.59	7.20	85	8.00	—	—	0.20	—
100	—	—	—	—	—	—	—	—	—	—	—
150	—	18.95	34.24	—	7.21	—	8.00	2.4	45	0.19	—
200	-1.82	18.97	34.27	27.61	7.27	86	8.00	2.4	45	0.05	—
250	-1.74	19.07	34.45	27.76	7.25	86	8.00	2.9	47	tr.	—
310	+1.03	19.09	34.49	27.65	4.86	62	8.00	3.1	53	0	—
401	1.28	19.20	34.69	27.79	4.52	58	8.00	3.1	67	0	—
492	1.15	19.21	34.70	27.82	4.79	61	8.00	2.9	67	0	—
581	1.09	19.20	34.69	27.81	4.57	58	8.00	2.9	77	0	—
772	0.78	19.20	34.69	27.83	4.73	60	8.00	2.7	77	—	—
961	0.55	19.20	34.69	27.84	4.72	59	8.00	2.5	77	—	—
1150	0.37	19.20	34.69	27.85	5.02	63	8.00	2.9	77	—	—
1442	0.11	19.18	34.65	27.83	5.10	63	8.00	2.7	83	—	—

## Station 7

Date 28, Jan., 1960

Time (GMT) 1200-1630

Lat. 66°18'S

Long. 49°08'E

Bottom depth 1470 m

Transp. 17 m

Sea Color 4

Depth	Temp. °C	Cl ‰	S ‰	$\sigma_t$	O <sub>2</sub> cc/L	O <sub>2</sub> /O <sub>2</sub> ' %	pH	P $\mu\text{g-a./L}$	Si $\mu\text{g-a./L}$	NO <sub>2</sub> -N $\mu\text{g-a./L}$	NO <sub>3</sub> -N $\mu\text{g-a./L}$
0	-1.1	18.63	33.66	27.09	7.61	91	8.00	2.3	34	0.16	—
13	-1.40	18.63	33.66	27.10	7.58	90	8.00	2.4	36	0.16	—
21	-1.49	18.63	33.66	27.11	7.50	89	8.00	1.9	33	0.15	—
29	-1.54	18.65	33.70	27.13	7.88	93	8.00	2.4	37	0.15	—
46	-1.59	18.66	33.71	27.15	7.64	90	8.00	2.3	37	0.12	—
67	-1.59	18.66	33.71	27.15	7.90	93	8.00	—	—	0.13	—
88	-1.62	18.68	33.75	27.18	7.77	92	8.00	2.3	40	0.11	—
130	-1.73	18.89	34.13	27.49	7.40	87	8.00	2.4	40	0.11	—
172	-1.70	19.01	34.34	27.67	7.09	84	8.00	2.4	42	0.11	—
214	-1.84	18.94	34.22	27.56	7.12	84	8.00	2.5	44	0.11	—
256	-1.75	18.97	34.27	27.61	7.25	86	8.00	2.5	44	tr.	—
282	-1.79	18.98	34.29	27.62	7.11	84	8.00	—	—	—	—
338	-1.71	18.99	34.31	27.63	7.05	83	8.00	—	—	—	—
452	-1.18	19.07	34.45	27.73	6.62	80	8.05	2.7	50	—	—
576	-0.65	19.12	34.54	27.78	6.03	74	8.05	2.7	50	—	—
731	-0.04	19.16	34.61	27.83	5.57	69	8.05	2.7	63	—	—

## Station 8

Date 1, Feb., 1960

Time (GMT) 1210-1630

Lat. 67°53'S

Long. 40°33'E

Bottom depth 2300 m

Transp. 25 m

Sea Color 3

Depth	Temp. °C	Cl ‰	S ‰	$\sigma_t$	O <sub>2</sub> cc/L	O <sub>2</sub> /O <sub>2</sub> ' %	pH	P $\mu\text{g-a./L}$	Si $\mu\text{g-a./L}$	NO <sub>2</sub> -N $\mu\text{g-a./L}$	NO <sub>3</sub> -N $\mu\text{g-a./L}$
0	-1.4	18.82	34.00	27.38	7.81	93	8.00	1.9	48	0.13	24.0
10	-1.58	18.80	33.96	27.36	7.65	91	8.00	1.8	45	0.12	18.0
18	-1.59	18.81	33.98	27.37	7.67	91	8.00	2.0	45	0.10	—
26	—	18.82	34.00	—	7.73	—	8.00	1.6	48	0.10	—
43	-1.60	18.81	33.98	27.37	7.71	91	8.00	1.5	45	0.10	18.0
63	-1.61	18.82	34.00	27.39	7.66	91	8.00	—	—	0.09	—
83	-1.78	18.92	34.18	27.53	7.36	87	8.00	1.9	45	0.05	19.0
124	-1.85	18.98	34.29	27.62	7.09	84	8.00	1.2	48	0.04	—
166	-1.83	18.99	34.31	27.63	6.90	81	8.00	1.7	48	0	22.0
213	-1.83	18.98	34.29	27.62	7.09	84	8.00	1.8	48	0	—
263	-1.79	19.00	34.33	27.65	6.90	82	8.00	1.8	50	0	20.0
309	-1.66	19.02	34.36	27.68	6.83	81	8.05	1.5	53	—	21.5
475	+0.92	19.20	34.69	27.92	4.66	59	8.00	1.5	77	—	20.5
655	0.73	19.20	34.69	27.91	4.73	60	8.00	2.0	83	—	21.0
846	0.59	19.20	34.69	27.91	4.76	60	8.00	2.0	83	—	22.0
1142	0.21	19.18	34.65	27.87	4.96	62	8.00	1.7	95	—	22.0
1439	0.08	19.13	34.56	27.78	4.93	61	8.00	1.2	100	—	24.0

## Station 9

Date 7, Feb., 1960

Time (GMT) 0953-1300

Lat. 68°17'S

Long. 39°51'E

Bottom depth 349 m

Transp. 25 m

Sea Color 3

Depth	Temp. °C	Cl ‰	S ‰	$\sigma_t$	O <sub>2</sub> cc/L	O <sub>2</sub> /O <sub>2</sub> ' %	pH	P $\mu\text{g-a./L}$	Si $\mu\text{g-a./L}$	NO <sub>2</sub> -N $\mu\text{g-a./L}$	NO <sub>3</sub> -N $\mu\text{g-a./L}$
0	-1.8	18.70	33.78	27.22	7.56	89	8.05	2.4	37	0.16	—
10	-1.76	18.70	33.78	27.22	7.53	89	8.05	2.2	40	0.16	—
20	-1.78	18.72	33.82	27.24	7.60	89	8.05	2.0	40	0.13	—
30	-1.80	18.84	34.04	27.42	7.52	89	8.05	2.2	40	0.09	—
50	-1.83	18.78	33.93	27.33	7.45	88	8.05	2.2	40	0.07	—
75	-1.79	18.80	33.96	27.36	7.51	88	8.05	—	—	0.06	—
100	-1.77	18.85	34.05	27.43	7.39	87	8.05	2.4	40	0.06	—
150	-1.83	18.91	34.16	27.52	7.40	87	8.05	2.2	44	0.05	—
200	-1.82	18.92	34.18	27.53	7.33	86	8.05	2.2	45	0.02	—
250	-1.82	18.94	34.22	27.57	7.29	86	8.00	2.2	45	tr.	—
300	-1.80	18.94	34.22	27.57	7.17	85	8.05	2.2	48	0.02	—
340	-1.71	18.97	34.27	27.61	7.09	84	8.00	2.4	50	0.01	—

## Station 10

Date 13, Feb., 1960

Time (GMT) 10.00-13.00

Lat. 67°01'S

Long. 40°16'E

Bottom depth 3700 m

Transp. 27 m

Sea Color 3

Depth	Temp. °C	Cl ‰	S ‰	$\sigma_t$	O <sub>2</sub> cc/L	O <sub>2</sub> /O <sub>2</sub> ' %	pH	P $\mu\text{g-a./L}$	Si $\mu\text{g-a./L}$	NO <sub>2</sub> -N $\mu\text{g-a./L}$	NO <sub>3</sub> -N $\mu\text{g-a./L}$
0	-0.4	—	—	—	7.81	—	8.05	2.7	48	0.21	—
10	-0.32	—	—	—	7.83	—	8.10	2.7	48	0.20	—
19	-0.34	—	—	—	7.84	—	8.10	2.5	43	0.18	—
27	-0.50	—	—	—	7.71	—	8.10	2.4	43	0.18	—
43	-0.68	—	—	—	7.70	—	8.05	2.2	43	0.17	—
63	-1.11	—	—	—	7.71	—	8.05	—	—	0.11	—
83	-1.69	—	—	—	6.85	—	8.05	2.7	45	0.11	—
123	-1.63	—	—	—	6.69	—	8.00	2.7	45	0.06	—
163	-0.63	—	—	—	5.89	—	8.00	2.7	50	0	—
203	+0.33	—	—	—	5.22	—	7.95	2.7	53	0	—
241	0.79	—	—	—	4.90	—	7.95	2.9	56	0	—
263	0.78	—	—	—	4.87	—	8.00	2.9	67	0	—
320	1.03	—	—	—	4.58	—	8.00	2.9	71	0	—

## Station 11

Date 20, Feb., 1960

Time (GMT) 0753-1513

Lat. 67°38'S

Long. 33°41'E

Bottom depth 1050 m

Transp. 46 m

Sea Color 1

Depth	Temp. °C	Cl ‰	S ‰	$\sigma_t$	O <sub>2</sub> cc/L	O <sub>2</sub> /O <sub>2</sub> ' %	pH	P μg-a./L	Si μg-a./L	NO <sub>2</sub> -N μg-a./L	NO <sub>3</sub> -N μg-a./L
0	-1.7	18.94	34.22	27.57	7.21	85	7.95	2.7	50	0.25	—
10	-1.75	18.93	34.20	27.55	7.22	85	8.00	2.7	50	0.24	—
20	-1.78	18.93	34.20	27.55	7.16	85	7.95	2.5	50	0.24	—
29	-1.82	18.92	34.18	27.53	7.05	83	8.00	2.5	50	0.27	—
49	-1.87	18.93	34.20	27.56	7.15	84	7.95	2.5	50	0.25	—
73	-1.84	18.91	34.16	27.52	6.95	82	7.95	2.7	50	0.23	—
98	-1.84	18.95	34.24	27.58	6.86	81	7.95	2.7	50	0.08	—
148	-1.78	19.00	34.33	27.66	6.90	82	7.95	2.8	53	0.03	—
198	-1.71	19.01	34.34	27.67	6.77	80	7.95	2.8	50	tr.	—
248	-1.52	19.03	34.38	27.69	6.55	78	7.95	2.9	59	tr.	—
305	-0.40	19.10	34.51	27.74	5.79	71	8.00	2.9	50	0	—
399	+0.41	19.16	34.61	27.79	5.12	64	8.00	3.1	62	—	—
494	0.47	19.18	34.65	27.82	4.97	62	7.95	2.9	77	—	—
591	0.46	19.19	34.67	27.83	4.94	62	8.00	3.0	83	—	—
788	0.24	19.19	34.67	27.85	4.89	61	8.00	3.1	91	—	—
987	0.06	19.19	34.67	27.87	4.89	61	8.00	3.1	83	—	—