Oceanographic Observations on the Eastern Surinam shelf

April 1969

D. Eisma and A.J. van Bennekom

Netherlands Institute for Sea Research

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I. Introduction

In April 1969 oceanographic data were collected on the Eastern part of the Surinam shelf between the Surinam river and the Marowijne (Maroni). This program was part of the O.C.P.S.II (Onderzoek Continentaal Plat Suriname), carried out on Hr. Ms. Luymes and made possible by the cooperation of the Royal Netherlands Navy. It was a continuation of the O.C.P.S.I - program carried out on the Western

part of the Surinam shelf in March - April 1966 (EISMA 1966, 1967). The results of the O.C.P.S.II program will be published in the Hydrographic Newsletter Special Publication no. 6. The data are given in this report.

II. Methods

At all stations water samples were taken with plastic NIO-bottles mounted with reversing thermometers. Surface water samples were collected with a bucket whereas temperature - depth curves were obtained with a bathythermograph. Salinity was determined on board with an Auto Lab inductive coupled salinometer. Secchi disc visibility was measured with a white disc of 30 cm diameter.

Reactive silicate, nitrite - nitrogen and reactive phosphorus were determined at sea, using a UNICAM SP 600 spectrophotometer equipped with 4 cm cells. The procedures from the 1965 edition of the Manual of seawater analysis by STRICKLAND & PARSONS were used (for phosphorus the "ordinary" method, that is without extraction). Nitrate - nitrogen was determined as nitrite after reduction with hydrazine.

Dissolved oxygen was determined with the Winkler method. 100 ml samples were preserved at sea; in the Laboratory of the Agricultural Experimental Station at Paramaribo the total content of the bottle was acidified and titrated using the reagents and further specifications from the Manual of seawater analysis. Saturation percentages were calculated with CARPENTER's Tables (GILBERT, PAWLEY & PARK 1968).

At two stations current velocity and direction were measured at the surface, near the bottom and at intermediate depths with an Ekman current meter.

III. Results and conclusions

The results are given in Tables I (station list), II (list of surface samples collected with a bucket), III (T, S, O_2 on the stations), IV (T, S of the surface samples), V (NO_2, NO_3, H_4SiO_4, PO_4 and Total P on the stations), VI (BT-data) and VII (current measurements). Summarizing the discusion given in the published paper mentioned above it can be concluded that:

a) although upward movement of deeper water landward over the shelf is evident from the vertical sections, and also the current measurements indicate that the resultant currents nearer to the bottom have a more landward direction than the surface currents, no opwelling water reached the surface during the period of sampling. This is indicated by the presence of strong haloclines as well as by the absence of a zone of lower surface temperature as found in 1966.

b) at the shelf edge the concentrations of NO_3, PO_4 and H_4SiO_4 increase with increasing depth. NO_2 shows a maximum at about 70 m depth which is in or just above the thermocline, or just below the photosynthetic zone. Nutrient rich deeper water moves landwards over the shelf.

c) a second area of high nutrient content is present in or just seaward of the nearshore mud zone, and is related to the decomposition of organic matter in the coastal water. This is also indicated by the low oxygen saturation values.

d) from the mud zone nutrient rich water moves seaward along the shelf floor. This is probably due to diffusion by tidal currents, although the residual currents are usually directed landward.

IV. References

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V. TABLES

Table I. Station list

Station number	Date	Position	Water depth (m)
I 67	20/3	06°17.0'N 55°03.9'W	22
A 68	24/3	06°32.5'N 55°15.6'W	38
A 69	25/3	07°19.5'N 55°07.5'W	69
I 70	26/3	06°39.2'N 54°57.0'W	43
J 71	27/3	06°37.7'N 54°44.7'W	38
M 72	29/3	06°14.4'N 54°02.3'W	25
M 73	31/3	06°52.2'N 53°54.4'W	59
L 74	1/4	06°59.9'N 54°08.9'W	66

Table I (continued)

		Date	Position	depth
L	75	2/4	06°06.3'N 54°18.6'W	15
I	76	8/4	06°08.8'N 55°03.5'W	6
J	77	8/4	06°14.4'N 54°48.8'W	12
N	78	9/4	06°04.6'N 53°50.7'W	24
N	79	9/4	06°13.3'N 53°49.5'W	27
N	80	9/4	06°28.8'N 53°46.9'W	35
M	81	10/4	05°59.4'N 54°04.4'W	6
M	82	10/4	06°09.4'N 54°02.8'W	22
L	83	10/4	06°11.8'N 54°17.9'W	19

Table I (continued)

		Date	Position	Depth
M	84	10/4	06°19.6'N 54°04.5'W	22
M	85	11/4	06°28.7'N 54°02.2'W	36
M	86	11/4	06°36.0'N 54°00.0'W	42
L	87	11/4	06°28.1'N 54°15.3'W	33
M	88	12/4	06°42.8'N 53°58.5'W	46
M	89	12/4	06°50.7'N 53°55.2'W	52
L	90	12/4	06°48.0'N 54°11.4'W	45
K	91	19/4	06°36.0'N 54°30.0'W	37
J	92	14/4	06°22.0'N 54°47.7'W	27

Table I (continued)

	Date	Position	Depth
I 93	14/4	06°22.0'N 55°01.0'W	31
I 93A	26/4	06°22'N 55°00'W	30
I 94	14/4	06°13.8'N 55°02.5'W	13
I 94A	26/4	06°15'N 55°03'W	15
L 95	15/4	07°17.8'N 54°04.0'W	99
L 96	15/4	07°28.0'N 54°03.1'W	207
M 97	16/4	07°18.5'N 53°48.7'W	130
M 98	16/4	07°10.6'N 53°50.7'W	85
M 99	16/4	07°02.6'N 53°52.0'W	76

Table I (continued)

	Date	Position	Depth
K 100	17/4	07°36.0'N 54°18.0'W	309
K 101	17/4	07°25.4'N 54°20.5'W	119
K 102	18/4	07°11.3'N 54°23.0'W	81
K 103	18/4	06°58.6'N 54°25.0'W	63
K 104A	18/4	06°47.0'N 54°27.0'W	47
K 105A	19/4	06°27.0'N 54°32.0'W	31
K 106A	19/4	06°19.0'N 54°33.0'W	21
K 107A	19/4	06°15.3'N 54°33.4'W	15
K 108A	19/4	06°10.4'N 54°33.5'W	10

Table I (continued)

	Date	Position	Depth
K 109	19/4	06°02.4'N 54°36.7'W	9
J 110	22/4	06°45.2'N 54°42.7'W	46
J 111	22/4	06°52.8'N 54°41.1'W	52
J 112	22/4	07°18.3'N 54°36.3'W	89
J 113	23/4	07°30'N 54°35'W	254
I 114	23/4	07°26'N 54°49'W	132
I 115	24/4	07°13'N 54°52'W	82
I 116	24/4	07°00'N 54°54'W	60
I 117	24/4	06°55'N 54°54'W	54
I 118	24/4	06°48'N 54°55'W	48

Table I (continued)

		Date	Position	Depth
I	118-2	25/4	06°48'N 54°55'W	49
I	118A	25/4	06°41'N 54°57'W	44
I	119	25/4	06°36'N 55°58'W	42
I	120	25/4	06°30'N 54°59'W	37
I	122	26/4	06°28'N 55°00'W	33

Table II. Surface samples (bucket)

Sample number	Date	Position	
1	21/3	06°27.3'N	55°12.7'W
2	21/3	06°23.3'N	55°12.8'W
3	21/3	06°16.7'N	55°13.4'W
4	21/3	06°10.7'N	55°14.0'W
5	24/3	06°10.7'N	55°19.7'W
6	24/3	06°15.7'N	55°18.7'W
7	24/3	06°20.7'N	55°18.1'W
8	24/3	06°25.3'N	55°16.9'W
9	24/3	06°29.8'N	55°15.7'W
10	25/3	06°32.9'N	55°15.1'W
11	25/3	06°38.3'N	55°13.9'W
12	25/3	06°43.8'N	55°12.5'W
13	25/3	06°49.6'N	55°11.2'W
14	25/3	06°55.2'N	55°09.8'W
15	25/3	07°01.1'N	55°08.5'W
16	25/3	07°07.0'N	55°06.8'W
17	25/3	07°17.0'N	55°06.9'W
18	25/3	07°21.4'N	55°07.9'W
19	28/3	07°40.3'N	54°19.1'W
20	28/3	07°30'N	54°20'W
21	28/3	07°17'N	54°22'W
22	28/3	07°05'N	54°24'W
23	28/3	06°57'N	54°25'W

Table II (continued)

	Date	Position	
24	28/3	06°52 'N	54°26 'W
25	28/3	06°47 'N	54°26 'W
26	28/3	06°41 'N	54°27 'W
27	28/3	06°36 'N	54°28 'W
28	28/3	06°31 'N	54°28 'W
29	29/3	06°26 'N	54°29 'W
30	29/3	06°20 'N	54°30 'W
31	29/3	06°17 'N	54°31 'W
32	29/3	06°01 'N	54°04 'W
33	29/3	06°06 'N	54°03 'W
34	29/3	06°12 'N	54°03 'W
35	31/3	06°19 'N	54°05 'W
36	31/3	06°24 'N	54°04 'W
37	31/3	06°29 'N	54°02 'W
38	31/3	06°34 'N	54°01 'W
39	31/3	06°39 'N	54°00 'W
40	31/3	06°49 'N	53°56 'W
41	1/4	06°55 'N	53°54 'W
42	1/4	06°57 'N	53°54 'W
43	1/4	07°03 'N	53°53 'W
44	1/4	07°16 'N	53°49 'W
45	1/4	07°24 'N	53°48 'W
46	1/4	07°36 'N	53°48 'W
47	3/4	06°02 'N	54°37 'W
48	3/4	06°15 'N	54°34 'W
49	3/4	06°21 'N	54°33 'W

Table II (continued)

	Date	Position	
50	3/4	06°33 'N	54°30 'W
51	3/4	06°46 'N	54°28 'W
52	3/4	06°58 'N	54°25 'W
S 1 (25)	8/4	05°49.0'N	55°08.3'W
S 2 (26)	8/4	05°49.3'N	55°06.3'W
S 3 (27)	8/4	05°52.3'N	55°05.4'W
S 4 (28)	8/4	05°54.3'N	55°07.4'W
S 5 (29)	8/4	05°56.2'N	55°10.4'W
S 6 (30)	8/4	05°57.1'N	55°12.4'W
S 7 (31)	8/4	06°03.4'N	55°13.0'W
S 8 (32)	8/4	06°05.4'N	55°13.1'W
S85 (1)	26/4	near Lightvessel Suriname river	
S86 (2)	26/4	at Lightvessel	
S87 (3)	26/4	buoy 2[a]	
S88 (4)	26/4	buoy 2	
S89 (5)	26/4	buoy 4	
S90 (6)	26/4	buoy 6	
S91 (7)	26/4	beacon R 2	
S92 (8)	26/4	beacon R 4	
S93 (9)	26/4	beacon R 4-6	
S94 (10)	26/4	beacon R 6	
S95 (11)	26/4	beacon R 8	
S96 (12)	26/4	beacon R 10	
S97 (13)	26/4	near Leonsberg	
S98 (14)	26/4	at Leonsberg	

Table II (continued)

	Date	Position	
321	29/5	06°22.5'N	55°16.3'W
322	29/5	06°34.4'N	55°15.8'W
323	30/5	06°46.8'N	55°15.2'W
324	30/5	06°59.4'N	55°15.0'W
325	30/5	07°12.0'N	55°14.3'W
326	30/5	07°24.3'N	55°13.9'W
327	30/5	07°36.7'N	55°13.4'W
328	30/5	07°43.3'N	55°12.9'W
329	30/5	07°49.0'N	55°12.8'W
330	30/5	08°01.2'N	55°12.3'W
331	30/5	08°13.6'N	55°11.9'W
332	30/5	08°25.3'N	55°11.5'W
333	30/5	08°37.8'N	55°11.0'W
334	30/5	08°50.0'N	55°10.4'W
335	30/5	09°02.0'N	55°10.0'W
336	30/5	09°14.0'N	55°09.8'W
337	30/5	09°26.6'N	55°09.2'W
338	30/5	09°38.8'N	55°08.7'W
339	30/5	09°51.4'N	55°08.1'W
340	30/5	09°58.1'N	55°07.9'W
341	2/6	06°15.8'N	53°45.0'W
342	2/6	06°24.5'N	53°36.1'W
343	2/6	06°33.4'N	53°27.7'W
344	2/6	06°42.2'N	53°18.8'W
345	2/6	06°50.9'N	53°10.0'W
346	2/6	07°00.0'N	53°01.2'W

Table II (continued)

	Date	Position	
347	2/6	07°00.2'N	52°48.7'W
348	3/6	07°00.7'N	52°36.1'W
349	3/6	07°00.8'N	52°24.0'W
350	3/6	07°00.9'N	52°11.9'W
351	3/6	07°01.3'N	51°59.3'W
352	3/6	90°01.9'N	51°47.4'W
353	3/6	07°02.2'N	51°35.5'W
354	3/6	07°02.1'N	51°22.7'W
355	3/6	07°02.1'N	51°10.0'W
356	3/6	07°02.1'N	50°58.0'W
357	3/6	07°02.7'N	50°45.9'W
358	3/6	07°03.8'N	50°32.8'W
359	3/6	07°04.4'N	50°20.1'W
360	3/6	07°05.2'N	50°06.8'W
561	3/6	07°06.1'N	49°54.6'W
562	3/6	07°07.0'N	49°41.8'W
563	3/6	07°08.0'N	49°31.6'W
564	3/6	07°08.8'N	49°20.0'W
565	3/6	07°09.7'N	49°08.7'W
566	3/6	07°10.3'N	48°56.8'W
567	3/6	07°11.1'N	48°45.4'W
568	3/6	07°12.0'N	48°33.9'W
569	3/6	07°13.1'N	48°22.3'W
570	3/6	07°13.8'N	48°11.3'W
571	3/6	07°13.8'N	47°59.3'W
572	4/6	07°12.8'N	47°47.7'W

Table II (continued)

	Date	Position	
573	4/6	07°11.7'N	47°36.4'W
574	4/6	07°10.1'N	47°25.4'W
575	4/6	07°09.0'N	47°14.7'W
576	4/6	07°07.6'N	47°03.8'W
577	4/6	07°06.1'N	46°52.8'W
578	4/6	07°04.6'N	46°41.7'W
579	4/6	07°03.3'N	46°30.7'W
580	4/6	07°01.8'N	46°20.0'W
581	4/6	07°00.7'N	46°08.9'W
582	4/6	06°59.4'N	45°58.0'W
583	4/6	06°58.0'N	45°46.8'W
584	4/6	06°56.9'N	45°35.8'W
585	4/6	06°55.3'N	45°25.4'W
586	4/6	06°54.0'N	45°14.3'W
587	4/6	06°52.6'N	45°03.6'W
588	4/6	06°52.8'N	44°52.2'W
589	4/6	06°53.0'N	44°41.4'W

Table III. T, S, O_2 (Stations)

Station number	Date	Local time	Water depth (m)	Sampling depth (m)	T °C	S °/oo	O_2 (µm)	O_2 (% sat.)
I 67	20/3	17.02-	22	0	26.70	34.99	383	93
		17.20		10	26.35	35.10	381	92
				20	24.45	36.11	219	52
A 68	24/3	16.42-	38	0	26.70	35.30	382	93
		17.00		10	26.10	35.34	367	89
				20	26.00	35.68	334	80
				30	25.28	36.15	336	80
A 69	25/3	17.52-	69	0	27.2	35.52	361	88
		18.09		10	26.8	35.52	375	92
				20	26.7	35.54	377	92
				30	26.7	35.75	383	93
				50	24.86	36.25	340	81
I 70	26/3	16.45-	43	0	27.50	35.47	380	94
		16.56		10	27.17	35.46	392	96
				20	26.90	35.56	382	94
				30	24.39	36.23	315	74
J 71	27/3	17.52-	38	0	27.6	35.39	383	95
		18.06		10	27.6	35.53	390	96
				20	27.2	35.63	389	96
				30	23.64	36.21	263	60

Table III (continued)

					Depth	T	S	O_2	O_2 (%)
M	72	29/3	16.35-16.50	25	0	27.7	34.45	387	95
					10	27.5	35.07	380	94
					20	26.7	35.40	322	78
M	73	31/3	18.10-18.27	59	0	27.8	35.90	401	100
					10	27.8	35.90	394	98
					20	27.8	35.93	389	97
					30	27.7	36.00	395	98
					50	25.5	36.08	385	92
L	74	1/4	17.25-17.43	66	0	27.90	35.89	401	100
					10	27.86	35.89	395	98
					20	27.84	35.94	394	98
					30	27.78	36.02	390	97
					50	27.41	36.09	387	96
L	75	2/4	17.55-18.07	15	0	27.5	32.46	362	88
					10	26.3	35.13	237	57

NB: Thermometers at stations A69, J71, M72, M73 and L75 incorrectly read. Temperatures at station L74 probably wrong.

I	76	8/4	13.40	6	0	-	32.54	386	-
					5	-	-	377	-
J	77	8/4	-	12	0	-	33.59	393	-
					10	-	35.59	334	-
N	78	9/4	08.01-08.13	24	0	27.39	33.86	433	105.8
					10	27.35	36.06	375	93.1
					20	27.11	36.09	342	84.1

Table III (continued)

					Depth	T	S	O_2	O_2 (%)
N	79	9/4	10.45-10.58	27	0	27.88	33.24	434	106.5
					10	27.59	35.95	381	94.4
					20	27.57	36.04	381	94.4
N	80	9/4	15.15-15.32	35	0	28.24	32.06	467	114.4
					10	27.83	35.48	413	102.6
					20	27.46	36.08	392	96.0
					30	27.44	36.08	-	-
M	81	10/4	08.45-08.56	6	0	27.27	24.14	359	83
M	82	10/4	11.35-11.48	22	0	27.22	34.68	427	104.3
					10	27.27	34.86	417	102.1
					20	27.33	-	351	-
L	83	10/4	14.45-14.57	19	0	27.40	34.18	397	97.1
					15	27.38	35.15	364	89.5
M	84	10/4	17.40-17.49	22	0	26.50	35.22	410	99.3
					10	26.40	35.25	406	98.2
					20	26.35	35.36	371	89.8
M	85	11/4	09.48-09.59	36	0	27.20	32.83	432	104.7
					10	27.58	35.25	348	98.2
					20	27.33	36.06	384	94.7
					34	27.31	36.06	382	94.2

Table III (continued)

				Depth	T	S	O_2	O_2 (%)
M 86	11/4	12.25-	42	0	27.53	33.77	422	103.5
		12.38		10	27.60	34.35	411	100.8
				20	27.60	36.06	406	100.6
				30	27.09	36.08	384	94.2
				40	27.10	36.08	381	93.8
L 87	11/4	15.48-	33	0	27.46	35.10	406	100.0
		16.03		10	27.49	35.12	405	99.8
				20	27.38	36.06	391	96.6
				32	27.34	36.06	390	96.2
M 88	12/4	08.47-	46	0	27.51	34.65	408	100.2
		09.02		10	27.53	34.74	407	100.2
				20	27.41	36.01	398	98.4
				30	26.69	36.12	367	89.5
				45	26.70	36.11	365	89.1
M 89	12/4	11.48-	52	0	27.68	34.04	409	100.3
		12.08		10	27.61	34.11	405	99.5
				20	27.52	35.64	-	-
				30	26.90	35.96	407	99.8
				50	26.86	36.14	394	96.5
L 90	12/4	15.37-	45	0	-	34.54	409	101.0
		15.56		10	27.79	34.72	410	101.4
				20	27.37	35.85	415	102.1
				30	26.81	36.05	404	98.6
				41	26.16	36.12	354	85.5
K 91	19/4	11.40-	37	0	27.49	34.27	419	102.6
		11.59		15	26.19	36.13	336	81.2
				25	26.12	36.14	332	80.2
				35	26.11	36.14	331	80.1

Table III (continued)

				Depth	T	S	O_2	O_2 (%)
J 92	14/4	13.08-	27	0	27.91	34.77	270	67.2
		13.20		10	27.38	35.90	335	82.5
				24	27.17	36.05	313	77.1
I 93	14/4	16.59-	31	0	28.04	34.78	416	103.3
		17.14		15	27.57	35.67	391	96.6
				30	27.18	36.01	375	92.3
I 93A	26/4	09.03-	30	0	27.00	35.10	388	94.9
		09.18		13	26.50	35.80	358	86.9
				28	25.96	36.21	309	74.5
I 94	14/4	18.24-	13	0	27.88	35.47	376	93.3
		18.36		12	27.20	36.06	327	80.4
I 94A	26/4	11.06-	15	0	27.24	35.01	374	91.6
		11.20		13	26.14	36.16	298	72.1
L 95	15/4	11.20-	99	0	27.98	31.77	432	105.4
		11.48		10	27.89	31.81	427	104.1
				20	27.78	33.92	-	-
				30	27.64	35.28	406	100.4
				42	27.01	35.91	413	101.3
				67	26.22	36.30	409	91.6
				88	22.44	36.26	338	76.8
L 96	15/4	14.40-	207	0	28.15	31.51	430	105.2
		15.07		20	27.71	34.12	412	101.0
				40	27.19	35.85	416	102.1
				60	26.34	36.36	403	98.0
				86	22.03	36.26	412	93.1
				110	20.32	36.37	299	65.4

Table III (continued)

				Depth	T	S	O_2	O_2 (%)
				135	19.17	36.30	288	61.8
				175	16.43	36.05	283	57.6
				205	12.50	35.31	283	57.6
M 97	16/4	09.43-	130	0	28.05	33.07	422	103.9
		10.20		10	28.00	33.17	424	104.1
				20	27.98	33.79	412	101.5
				35	26.89	35.89	405	99.3
				55	26.47	36.11	404	98.0
				70	24.16	36.43	368	86.1
				85	21.80	36.27	323	71.8
				117	20.68	36.33	316	69.6
				140	19.01	36.25	283	60.4
M 98	16/4	14.10-	85	0	27.92	32.59	443	108.5
		14.29		7	27.82	33.10	440	107.6
				15	27.82	33.90	426	104.6
				21	27.70	35.49	410	101.7
				38	26.86	35.97	411	102.2
				59	26.30	36.25	406	98.6
				71	23.11	36.20	336	77.0
				85	22.45	36.24	321	73.0
M 99	16/4	17.44-	76	0	27.84	32.96	425	104.1
		18.01		10	27.79	33.71	386	94.7
				20	27.70	34.78	416	102.6
				30	27.29	35.68	387	95.1
				46	26.22	36.37	402	97.6
				68	23.70	36.19	301	69.7

Table III (continued)

				Depth	T	S	O_2	O_2 (%)
K 100	17/4	12.05-	309	0	27.65	32.16	412	100.2
		12.36		10	27.76	32.77	411	100.2
				40	26.98	35.97	406	99.7
				70	26.02	36.57	392	94.8
				100	21.46	36.32	320	71.3
				130	19.02	36.43	286	61.1
				170	15.09	35.84	300	59.3
				210	12.56	35.45	314	58.9
				260	10.42	35.06	298	53.2
				309	9.76	34.99	278	54.0
K 101	17/4	15.41-	119	0	27.72	32.91	417	101.9
		16.05		10	27.78	33.04	415	101.5
				30	27.78	34.39	407	100.4
				60	25.78	36.60	395	95.0
				90	21.71	36.32	320	71.6
				115	17.77	36.20	279	58.1
K 102	18/4	12.26-	81	0	27.72	33.84	419	102.8
		12.47		10	27.65	33.88	421	103.2
				30	27.70	35.38	407	100.6
				50	26.69	36.23	406	99.3
				65	24.27	36.21	355	83.2
				80	23.64	36.21	332	77.0
K 103	18/4	16.20-	63	0	27.73	34.37	419	103.3
		16.38		20	27.42	35.53	416	102.4
				35	26.77	36.07	417	103.7
				45	25.69	36.27	383	92.0
				55	25.01	36.20	341	80.9
				63	25.00	36.22	341	80.9

Table III (continued)

				Depth	T	S	O_2	O_2 (%)
K 104A	18/4	18.58-19.17	47	0	27.46	34.38	421	103.2
				15	27.10	35.82	412	101.0
				25	26.80	36.02	404	98.6
				35	25.82	36.25	361	86.8
				45	25.47	26.22	437	104.4
K 105A	19/4	12.55-13.15	31	0	27.70	34.97	422	104.4
				10	27.48	35.33	401	98.8
				20	26.62	36.11	374	91.2
				29	26.59	36.12	318	77.5
K 106A	19/4	14.05-14.20	21	0	27.77	35.18	391	96.9
				10	27.32	35.26	354	86.8
				19	26.82	36.10	301	73.5
K 107A	19/4	14.38-14.50	15	0	27.88	34.05	404	99.3
				13	27.15	35.35	331	81.1
K 108A	19/4	15.25-15.43	10	0	27.90	32.44	353	85.3
				8	27.77	32.37	350	85.4
K 109	19/4	16.36-16.45	9	0	28.17	30.47	382	95.5
J 110	22/4	08.11-08.27	46	0	27.33	35.34	393	96.5
				10	27.31	35.32	382	93.8
				20	26.71	36.05	384	93.6
				30	25.46	36.22	330	79.0
				40	25.37	36.21	321	76.7

Table III (continued)

				Depth	T	S	O_2	O_2 (%)
J 111	22/4	11.25-11.42	52	0	27.69	34.74	410	101.1
				10	27.37	34.77	384	94.2
				20	26.84	35.98	401	98.2
				30	25.45	36.24	397	95.0
				40	25.14	36.23	335	84.5
				50	25.07	36.24	310	73.5
J 112	22/4	16.08-16.30	89	0	28.10	33.06	411	101.0
				10	27.90	33.79	392	96.4
				25	27.05	35.94	394	96.4
				45	26.37	36.25	397	96.5
				65	23.44	36.25	326	75.2
				85	22.10	36.29	297	67.1
J 113	23/4	11.41-12.09	254	0	28.20	33.52	388	96.0
				10	28.03	34.16	366	90.5
				20	27.85	35.26	387	95.7
				30	27.29	35.88	381	94.0
				50	26.32	36.24	404	98.0
				75	23.56	36.32	310	71.8
				100	21.46	36.39	283	63.2
				150	16.73	36.12	277	56.6
				200	12.68	35.44	277	56.6
				250	10.22	35.03	221	39.3
I 114	23/4	15.51-16.20	132	0	28.28	32.68	407	100.8
				10	28.00	34.36	404	100.0
				20	27.86	35.16	407	100.8
				30	27.27	35.83	404	99.3
				50	26.71	36.14	409	100.0
				75	23.76	36.38	348	81.0
				100	21.31	36.34	311	69.3
				125	18.63	36.27	286	60.7

Table III (continued)

				Depth	T	S	O_2	O_2 (%)
I 115	24/4	09.19-	82	0	27.81	34.35	402	99.1
		09.40		10	27.77	34.40	401	98.8
				20	27.65	35.45	385	95.1
				40	26.72	36.12	411	100.2
				60	24.69	36.24	359	84.8
				80	23.93	36.21	335	78.1
I 116	24/4	12.56-	60	0	27.91	34.36	376	92.7
		13.17		10	27.60	34.37	379	92.9
				20	27.03	35.89	395	96.7
				40	25.70	36.12	359	86.2
				55	24.49	36.18	323	76.0
I 117	24/4	15.40-	54	0	27.80	35.42	398	98.4
		15.57		10	27.54	35.42	377	93.1
				20	27.10	35.86	379	92.9
				30	25.70	36.04	389	93.5
				50	24.75	36.18	340	80.3
I 118	24/4	17.43-	48	0	27.69	35.49	398	98.6
		18.00		15	27.41	35.52	396	97.5
				30	26.60	36.15	408	99.5
				45	25.72	36.20	338	81.1
I 118-2	25/4	07.12-	49	0	27.42	35.38	401	98.6
		07.30		15	27.39	35.57	390	96.2
				30	26.75	36.28	400	98.0
				45	25.07	36.20	335	79.4
I 118A	25/4	09.18-	44	0	27.59	35.38	385	94.3
		09.35		15	27.39	35.58	382	94.0
				30	25.78	36.21	374	90.1
				40	25.32	36.19	313	74.6

Table III (continued)

				Depth	T	S	O_2	O_2 (%)
I 119	25/4	10.13-	42	0	27.66	35.34	393	97.1
		10.27		15	26.85	36.05	395	96.7
				30	-	36.07	328	-
				40	25.44	36.18	388	78.2
I 120	25/4	12.31-	37	0	27.81	35.41	339	98.8
		12.48		10	27.37	35.52	393	96.7
				25	25.76	36.22	353	84.7
				35	25.76	36.21	344	82.6
I 122	26/4	07.09-	33	0	27.40	35.54	385	94.7
		07.24		15	27.29	35.62	378	92.9
				30	25.96	36.21	336	81.0

Table IV. T, S (Surface samples)

Sample number	Date	Local time	$T_{^oC}$	$S_{^o/oo}$
1	21/3	10.22	26.8	35.21
2	21/3	11.34	27.0	35.17
3	21/3	12.34	27.2	35.16
4	21/3	13.30	28.2	34.09
5	24/3	12.00	27.7	34.02
6	24/3	13.00	26.7	34.11
7	24/3	14.00	26.9	35.16
8	24/3	15.00	26.7	35.41
9	24/3	16.00	26.6	35.38
10	25/3	08.00	26.6	34.91
11	25/3	09.00	26.5	35.31
12	25/3	10.00	27.1	35.49
13	25/3	11.00	27.0	35.54
14	25/3	12.00	26.9	35.62
15	25/3	13.00	27.3	35.67
16	25/3	14.00	27.5	35.72
17	25/3	15.00	27.5	35.54
18	25/3	16.00	-	35.48
19	28/3	14.30	-	35.33
20	28/3	15.30	-	35.79
21	28/3	16.30	-	36.09
22	28/3	17.30	-	35.55
23	28/3	18.30	-	35.24
24	28/3	19.30	-	35.35
25	28/3	20.30	-	35.51
26	28/3	21.30	-	35.59
27	28/3	22.30	-	35.54
28	28/3	23.30	-	35.46

Table IV (continued)

	Date	Time	T	S
29	29/3	00.30	-	35.50
30	29/3	01.30	-	35.04
31	29/3	02.30	-	34.86
32	30/3	14.00	-	33.92
33	30/3	15.00	-	34.41
34	30/3	16.00	-	34.49
35	31/3	10.00	-	33.17
36	31/3	11.00	-	33.71
37	31/3	12.00	-	34.27
38	31/3	13.00	-	34.79
39	31/3	14.00	-	35.27
40	31/3	16.00	-	35.79
41	1/4	08.00	-	36.01
42	1/4	09.00	-	35.94
43	1/4	10.00	-	35.82
44	1/4	11.15	-	35.97
45	1/4	12.00	-	35.77
46	1/4	13.00	-	35.90
47	3/4	09.00	-	31.55
48	3/4	10.00	-	33.91
49	3/4	10.30	-	34.00
50	3/4	11.30	-	32.86
51	3/4	12.30	-	32.80
52	3/4	13.30	-	31.35
S 1 (25)	8/4	10.47	28.2	1.4
S 2 (26)	8/4	11.01	28.8	6.8
S 3 (27)	8/4	11.25	28.6	7.40
S 4 (28)	8/4	-	28.4	10.20
S 5 (29)	8/4	12.02	29.0	15.92
S 6 (30)	8/4	12.21	29.6	15.08
S 7 (31)	8/4	12.57	27.8	31.28
S 8 (32)	8/4	13.12	27.8	31.82
S85 (1)	26/4	12.20	-	32.41
S86 (2)	26/4	12.35	-	31.97

Table IV (continued)

	Date	Time	T	S
S87 (3)	26/4	12.46	-	31.35
S88 (4)	26/4	12.56	-	30.61
S89 (5)	26/4	13.09	-	29.99
S90 (6)	26/4	13.21	-	28.74
S91 (7)	26/4	13.32	-	28.75
S92 (8)	26/4	13.37	-	26.00
S93 (9)	26/4	-	-	24.28
S94 (10)	26/4	13.45	-	21.50
S95 (11)	26/4	13.53	-	19.47
S96 (12)	26/4	13.57	-	18.81
S97 (13)	26/4	-	-	16.82
S98 (14)	26/4	-	-	13.99
		G.M.T.		
321	29/5	22.00	27.2	34.846
322	29/5	23.00	25.9	34.841
323	30/5	00.00	25.9	35.069
324	30/5	01.00	26.2	34.961
325	30/5	02.00	26.4	34.480
326	30/5	03.00	26.4	34.335
327	30/5	04.00	26.4	34.068
328	30/5	04.30	26.4	34.077
329	30/5	05.00	26.4	34.491
330	30/5	06.00	26.6	33.417
331	30/5	07.00	26.6	32.304
332	30/5	08.00	26.8	31.814
333	30/5	09.00	27.0	31.423
334	30/5	10.00	27.0	31.856
335	30/5	11.00	27.2	32.104
336	30/5	12.00	27.3	31.925
337	30/5	13.00	27.2	30.756
338	30/5	14.00	27.2	29.229
340	30/5	15.30	27.4	29.165
341	2/6	17.15	27.1	35.468
342	2/6	18.15	27.0	34.500

Table IV (continued)

	Date	Time	T	S
343	2/6	19.15	27.9	34.131
344	2/6	20.15	28.2	32.186
345	2/6	21.15	28.4	30.420
346	2/6	22.15	28.2	28.877
347	2/6	23.15	28.2	29.234
348	3/6	00.15	28.2	28.983
349	3/6	01.15	28.4	28.546
350	3/6	02.15	28.0	26.369
351	3/6	03.15	28.0	25.046
352	3/6	04.15	28.1	22.070
353	3/6	05.15	28.1	21.226
354	3/6	06.15	28.1	20.988
355	3/6	07.15	28.3	19.621
356	3/6	08.15	27.9	18.075
357	3/6	09.15	28.4	16.603
358	3/6	10.15	27.8	16.295
359	3/6	11.15	28.2	16.965
360	3/6	12.15	27.9	18.582
561	3/6	13.15	28.2	22.234
562	3/6	14.15	28.3	25.652
563	3/6	15.00	28.0	27.708
564	3/6	16.00	28.2	31.350
565	3/6	17.00	27.7	31.605
566	3/6	18.00	27.5	33.308
567	3/6	19.00	27.6	33.824
568	3/6	20.00	27.4	35.469
569	3/6	21.00	27.3	35.495
570	3/6	22.00	27.4	35.427
571	3/6	23.00	26.7	35.535
572	4/6	00.00	26.6	35.507
573	4/6	01.00	26.9	35.566
574	4/6	02.00	26.4	35.620
575	4/6	03.00	26.3	35.740
576	4/6	04.00	26.4	36.003

Table IV (continued)

	Date	Time	T	S
577	4/6	05.00	26.5	36.006
578	4/6	06.00	26.4	35.991
579	4/6	07.00	26.5	35.921
580	4/6	08.00	26.4	35.887
581	4/6	09.00	26.4	35.890
582	4/6	10.00	26.2	35.687
583	4/6	11.00	26.1	35.689
584	4/6	12.00	26.2	35.667
585	4/6	13.00	26.1	35.593
586	4/6	14.00	26.4	35.466
587	4/6	15.00	26.9	35.475
588	4/6	16.00	26.8	35.448
589	4/6	17.00	26.9	35.300

Table V.

NO_2, NO_3, H_4SiO_4, PO_4 and Total P (Stations)

Station number	Sampling depth (m)	NO_2 (µM)	NO_3 (µM)	H_4SiO_4 (µM)	PO_4 (µM)	Total P
I 76	0	0.35	1.1	-	0.7	1.2
	5	-	-	-	-	-
J 77	0	-	-	2.8	-	-
	10	-	-	2.2	-	-
N 78	0	-	-	2.5	-	-
	10	-	-	3.0	-	-
	20	-	-	5.4	-	-
N 79	0	-	-	2.7	-	-
	10	-	-	2.8	-	-
	20	-	-	3.9	-	-
N 80	0	-	-	4.1	-	-
	10	-	-	2.4	-	-
	20	-	-	3.6	-	-
	30	-	-	2.6	-	-
M 81	0	0.41	3.4	47	0.5	1.7
M 82	0	0.31	1.0	4.5	0.2	0.7
	10	-	-	2.7	-	-
	20	0.62	1.3	6.3	0.3	-

Table V (continued)

	Depth	NO_2	NO_3	H_4SiO_4	PO_4	Total P
L 83	0	0.21	0.1	8.1	0.2	0.7
	15	-	-	7.3	-	-
M 84	0	0.28	1.0	2.5	0.15	-
	10	-	-	2.1	-	-
	20	-	-	5.3	-	-
M 85	0	0.02	0.1	2.4	0.2	-
	10	-	-	2.2	-	-
	20	0.24	0.4	3.6	0.3	-
	34	0.19	0.3	-	0.4	-
M 86	0	0.01	0.2	3.2	0.15	-
	10	-	-	2-6	-	-
	20	0.04	0.2	1.1	0.15	0.15
	30	-	-	4.8	-	-
	40	0.41	0.2	4.8	0.25	-
L 87	0	0.02	0.15	2.3	0.15	-
	10	-	-	-	-	-
	20	0.19	0.2	3.3	0.2	-
	32	0.23	0.6	3.0	0.2	-
M 88	0	0.05	0.4	-	0.1	-
	10	-	-	-	-	-
	20	0.05	0.0	-	0.05	0.7
	30	-	-	-	-	-
	45	0.66	0.7	-	0.25	-

Table V (continued)

	Depth	NO_2	NO_3	H_4SiO_4	PO_4	Total P
M 89	0	0.04	0.0	4.4	0.15	-
	10	-	-	4.1	-	-
	20	0.03	0.3	1.4	0.05	0.6
	30	-	-	1.3	-	-
	50	0.43	0.7	1.5	0.05	-
L 90	0	-	0.0	7.2	0.1	-
	10	-	-	-	-	-
	20	-	0.0	1.2	0.05	-
	30	-	-	-	-	-
	41	-	1.4	5.9	0.4	-
K 91	0	0.03	0.25	2.8	0.15	-
	15	0.28	0.5	6.0	0.4	-
	25	0.37	1.0	6.4	0.3	-
	35	0.32	1.1	6.8	0.4	-
J 92	0	-	-	5.3	-	-
	10	-	-	4.8	-	-
	24	-	-	5.3	-	-
I 93	0	0.15	0.4	9.2	0.15	-
	15	-	-	4.3	-	-
	30	0.49	0.2	3.8	0.15	-
I 93A	0	0.15	-	4.0	0.15	0.4
	13	0.30	-	5.0	0.3	0.8
	28	0.65	-	6.5	0.25	1.0
I 94	0	0.51	2.8	-	0.25	-
	12	0.45	2.3	-	0.4	-

Table V (continued)

	Depth	NO_2	NO_3	H_4SiO_4	PO_4	Total P
I 94A	0	0.33	-	10.2	0.25	1.2
	13	0.95	-	8.7	0.3	-
L 95	0	0.07	-	3.5	-	-
	10	0.03	-	2.5	-	-
	20	0.05	-	2.3	-	-
	30	0.00	-	0.8	-	-
	42	0.02	-	1.3	-	-
	67	0.17	-	0.9	-	-
	88	0.11	-	3.6	-	-
L 96	0	0.07	-	3.8	-	-
	20	-	-	2.8	-	-
	40	0.00	-	1.3	-	-
	60	0.18	-	1.1	-	-
	86	0.06	-	3.2	-	-
	110	0.03	-	4.2	-	-
	135	0.01	-	4.5	-	-
	175	0.00	-	5.9	-	-
	205	0.08	-	11.3	-	-
M 97	0	0.07	-	2.2	0.0	-
	10	0.01	0	1.2	0.0	-
	20	0.04	0	2.1	0.0	-
	35	0.00	0.1	1.4	0.0	-
	55	0.04	0.1	2.4	0.0	-
	70	0.14	3	1.9	0.15	-
	85	0.07	5	3.8	0.4	-
	117	-	7.5	5.1	0.5	-
	140	0.08	10	5.8	0.6	-

Table V (continued)

	Depth	NO_2	NO_3	H_4SiO_4	PO_4	Total P
M 98	0	0.00	0	1.0	0.0	-
	7	0.04	0.1	1.3	0.05	-
	15	-	-	-	-	-
	21	0.01	0	0.4	0.0	-
	38	0.02	0	-	0.0	-
	59	-	-	1.1	-	-
	71	0.09	0.4	4.4	0.55	-
	85	0.15	-	-	-	-
M 99	0	0.01	-	0.7	-	-
	10	0.03	0.1	1.1	-	-
	20	-	-	0.8	-	-
	30	0.01	0	1.1	-	-
	46	0.08	0	1.1	-	-
	68	0.26	5	10.5	-	-
K 100	0	0.03	0	2.1	0.0	-
	10	0.04	0.1	3.3	0.0	-
	40	0.03	0.1	1.7	0.0	-
	70	0.30	1.2	0.8	0.0	-
	100	0.05	8.7	3.3	0.45	-
	130	0.07	12.8	3.8	0.55	-
	170	0.00	20	6.9	1.0	-
	210	0.09	25	9.2	1.35	-
	260	0.02	29	12.2	1.5	-
	309	0.18	29	14.3	1.7	-
K 101	0	0.00	0	2.1	0.0	-
	10	0.00	0.2	1.9	0.0	-
	30	0.00	0.2	2.5	0.0	-
	60	0.27	0.6	1.0	0.0	-
	90	0.08	8	4.2	0.75	-
	115	0.05	14	5.2	0.7	-

Table V (continued)

	Depth	NO_2	NO_3	H_4SiO_4	PO_4	Total P
K 102	0.	0.07	0.0	1.9	0.05	0.3
	10	0.06	0.1	0.8	0.05	-
	30	0.03	0	0.8	0.0	0.35
	50	0.03	0	1.3	0.0	-
	65	0.18	3.4	2.6	0.45	-
	80	0.16	3.1	4.5	0.4	-
K 103	0	0.09	0	2.0	0.0	0.5
	20	0.06	0	1.1	0.0	0.5
	35	0.00	0.2	1.3	0.0	0.6
	45	0.24	1.0	2.0	0.1	0.6
	55	0.19	2.2	5.5	0.3	0.65
	63	0.17	2.3	5.4	0.45	0.7
K 104A	0	0.00	0	1.7	1.1	-
	15	0.01	0	1.4	0.0	-
	25	0.11	0.2	1.7	0.05	-
	35	0.24	0.3	4.6	0.2	-
	45	0.21	0.5	6.1	0.3	-
K 105A	0	0.09	0.35	4.1	0.2	-
	10	0.12	0.45	3.3	0.05	-
	20	0.30	0.7	5.6	0.15	-
	29	0.28	0.7	6.3	0.2	-
K 106A	0	0.08	0.3	6.3	0.15	-
	10	0.28	0.7	6.4	0.2	-
	19	0.85	-	8.6	-	-
K 107A	0	0.18	0.7	10.5	0.2	-
	13	0.75	0.5	8.5	0.3	-

Table V (continued)

	Depth	NO_2	NO_3	H_4SiO_4	PO_4	Total P
K 108A	0	1.25	1.5	18.1	0.4	-
	8	1.30	1.5	18.0	0.5	-
K 109	0	1.25	2	24.9	0.45	-
J 110	0	<0.03	0.1	1.6	-	-
	10	<0.03	0.1	1.7	-	-
	20	0.03	0	0.9	-	-
	30	0.20	2.4	5.2	-	-
	40	0.27	2.7	5.9	-	-
J 111	0	0.00	0.1	1.5	-	-
	10	0.02	0.1	1.3	-	-
	20	0.03	0.2	1.2	-	-
	30	0.03	0.2	1.2	-	-
	40	0.22	2.4	4.6	-	-
	50	0.30	3.1	5.3	-	-
J 112	0	0.00	0.1	3.3	-	-
	10	0.01	0.1	1.9	-	-
	25	0.05	0.1	1.5	-	-
	45	0.18	0.1	1.1	-	-
	65	0.07	3.8	3.8	-	-
	85	0.19	6.4	7.0	-	-
J 113	0	0.03	0.1	2.3	0.05	-
	10	0.03	0.2	1.7	0.05	-
	20	0.02	0.1	0.8	0.05	-
	30	0.03	0.0	1.5	0.05	-
	50	0.21	0.6	2.3	0.10	-
	75	0.12	5.8	3.4	0.4	-
	100	0.04	7.7	3.3	0.55	-
	150	0.04	16.5	5.3	0.9	-

Table V (continued)

	Depth	NO_2	NO_3	H_4SiO_4	PO_4	Total P
	200	0.06	25	9.0	1.45	-
	250	0.16	27	13.5	1.7	-
I 114	0	0.03	0.1	2.7	0.1	0.75
	10	0.03	0.25	2	0.05	0.6
	20	0.06	0.1	1.2	-	0.7
	30	0.03	0	1	0.0	0.55
	50	0.03	0.1	2	0.0	1.05
	75	0.19	3.6	6.5	0.4	0.85
	100	0.09	9.4	4.5	0.55	0.75
	125	0.06	13.5	5.5	0.8	1.0
I 115	0	-	-	1.3	0.05	0.55
	10	0.01	-	1.3	0.0	0.45
	20	-	-	1.5	0.05	0.55
	40	0.02	-	0.9	0.0	0.35
	60	0.20	-	2.5	0.25	0.65
	80	0.20	-	4.1	0.4	0.5
I 116	0	0.10	0.1	1.6	0.0	0.4
	10	0.01	0	1.0	0.0	0.55
	20	0.01	0.1	1.3	0.0	0.85
	40	0.15	0.6	1.8	0.1	0.5
	55	0.25	2.0	4.3	0.4	0.4
I 117	0	0.03	0	-	0.0	0.2
	10	0.04	0	1.5	0.15	0.2
	20	0.01	0.4	1.8	0.05	-
	30	0.01	0.1	1.8	0.05	0.2
	50	0.30	1.4	4.7	0.2	0.4

Table V (continued)

	Depth	NO_2	NO_3	H_4SiO_4	PO_4	Total P
I 118	0	-	0.1	3.1	0.1	0.15
	15	0.01	0.1	2.7	0.05	0.30
	30	0.03	0.4	1.4	0.05	0.35
	45	0.32	1.7	4.9	0.3	0.5
I 118-2	0	-	-	2.3	0.1	0.25
	15	-	-	1.8	0.0	0.2
	30	-	-	1.5	0.0	0.0
	45	-	-	5.0	0.3	0.35
I 118A	0	0.04	0	2.3	0.05	0.1
	15	0.01	0	1.8	0.05	0.2
	30	0.08	0.3	3.0	0.05	0.2
	40	0.37	1.3	5.4	0.3	0.35
I 119	0	0.04	0	1.9	0.1	0.15
	15	0.01	0.25	1.5	0.0	0.15
	30	0.05	0.1	1.2	0.0	0.55
	40	0.45	2.6	5.6	0.3	0.75
I 120	0	0.05	0.2	3.1	0.1	0.5
	10	0.04	0.2	2.8	0.1	0.5
	25	0.41	0.9	5.3	0.25	0.55
	35	0.41	1.3	5.9	0.25	1.6
I 122	0	0.13	1.5	3.9	0.1	0.7
	15	0.15	0.8	3.7	0.15	-
	30	0.75	1.0	6.0	0.2	0.7

Table VI. BT - data

Station number	Position		SST °C	Depth of thermocline(s) (m)	Water depth (m)
1	06°17'N	55°04'W	26.50	12	25
2	06°23'N	55°13'W	26.83	14	32
3	06°18'N	55°13'W	27.06	14	19
4	06°11'N	55°19'W	27.11	5	16
5	06°16'N	55°19'W	27.11	2 (8)	19
6	06°21'N	55°18'W	27.67	2 (18)	33
7	06°25'N	55°17'W	26.89	7 (15)	36
8	06°30'N	55°16'W	26.89	4 (18)	40
9	06°32'N	55°16'W	26.67	8, 21	41
10	06°33'N	55°15'W	26.56	19	40
11	06°38'N	55°14'W	26.44	23	48
12	06°44'N	55°13'W	26.89	28	49
13	06°50'N	55°11'W	26.78	30	54
14	06°55'N	55°09'W	27.06	24	61
15	07°01'N	55°09'W	27.22	49	62
16	07°07'N	55°07'W	27.44	55	70
17	07°17'N	55°07'W	27.44	38	93
18	07°08'N	55°09'W	27.11	43	71
19	07°16'N	55°07'W	27.17	55	90
20	07°29'N	55°05'W	27.00	47	183 (?)
21	07°38'N	55°03'W	27.44	55	200
22	07°40'N	54°53'W	27.67	57	180
23	07°36'N	54°48'W	27.78	70	135
24	07°23'N	54°50'W	27.78	48	70
25	07°11'N	54°53'W	27.72	43	52
26	06°58'N	54°54'W	27.61	30	53
27	06°45'N	55°56'W	27.50	22	33
28	06°39'N	54°57'W	27.44	23	46

Table VI (continued

	Position		SST	Th. depth	Water depth
29	06°36'N	54°58'W	27.28	25	45
30	06°31'N	54°55'W	27.22	17	39
31	06°25'N	55°01'W	26.61	20	38
32	06°20'N	55°01'W	26.72	15	22
33	06°24'N	54°48'W	26.67	11	26
34	06°38'N	54°45'W	27.67	25	45
35	06°41'N	54°44'W	27.56	25	27
36	06°53'N	54°41'W	27.56	22	42
37	07°06'N	54°39'W	27.78	38	58
38	07°19'N	54°36'W	28.00	43	75
39	07°32'N	54°35'W	28.17	73	142
40	07°40'N	54°30'W	28.06	73	152
41	07°40'N	54°19'W	28.22	80	154
42	07°30'N	54°19'W	28.11	47	87
43	07°17'N	54°22'W	28.17	61	86
44	07°05'N	54°24'W	28.06	57	66
45	06°56'N	54°25'W	27.89	40	63
46	06°52'N	54°26'W	27.89	35	54
47	06°47'N	54°26'W	27.89	35	39
48	06°41'N	54°27'W	27.83	30	39
49	06°36'N	54°28'W	27.78	30	36
50	06°31'N	54°28'W	27.61	23	30
51.	06°26'N	54°29'W	27.61	22	25
52	06°20'N	54°30'W	27,56	-	13
53	06°15'N	54°31'W	27.28	10	18
54	06°09'N	54°02'W	27.61	-	17
55	06°15'N	54°02'W	27.72	19	26
56	06°19'N	54°05'W	27.72	18	25
58	06°29'N	54°02'W	27.78	- (12)	39
59	06°34'N	54°01'W	28.00	- (16)	44
60	06°39'N	54°00'W	28.00	- (16)	49
61	06°44'N	53°58'W	28.11	- (10)	47
62	06°49'N	53°56'W	28.06	- (20)	53
63	06°57'N	53°57'W	27.83	- (35)	63

Table VI (continued)

	Position		SST	Th. depth	Water depth
64	06°54'N	53°56'W	27.89	-	35
65	06°57'N	53°54'W	27.78	- (47)	60
66	07°02'N	53°53'W	27.83	67 (35)	85
67	07°13'N	53°50'W	27.83	60	80
68	07°24'N	53°48'W	28.06	80	135
69	07°36'N	53°48'W	28.06	83	147
70	07°39'N	53°58'W	28.06	100	133
71	07°29'N	54°03'W	28.17	80	143
72	07°16'N	54°06'W	28.28	70	81
73	07°03'N	54°08'W	28.28	67	-
74	06°59'N	54°09'W	28.06	58	72
75	06°59'N	54°09'W	28.11	- (50)	73
76	07°07'N	54°11'W	28.00	- (41)	73
77	07°03'N	54°09'W	28.00	-	52
78	07°02'N	54°08'W	27.94	73	82
79	06°59'N	54°09'W	28.11	- (35)	64
80	06°52'N	54°10'W	28.11	-	51
81	06°46'N	54°12'W	28.28	- (7)	41
82	06°41'N	54°13'W	27.78	42 (9)	47
83	06°30'N	54°15'W	28.22	30	30
85	06°08'N	54°20'W	27.72	4	15
86	06°21'N	54°33'W	27.61	7	20
87	06°34'N	54°30'W	28.28	-	27
88	06°46'N	54°28'W	28.11	-	30
89	06°59'N	54°25'W	28.17	55	65
90	06°52'N	54°33'W	28.22	- (30)	59
91	06°42'N	54°43'W	28.06	- (18)	35
92	06°32'N	54°51'W	28.00	20	38
93	06°22'N	55°00'W	28.11	4	31
94- N 78	06°05'N	53°51'W	27.50	7	25
95- N 79	06°13'N	53°49'W	28.00	-	28
97- N 80	06°28'N	53°47'W	28.33	- (13)	39
99- M 82	06°09'N	54°03'W	27.44	-	25

Table VI (continued)

	Position		SST	Th. depth	Water depth
100- L 83	06°11'N	54°18'W	27.56	16	19
101- M 84	06°20'N	54°05'W	27.28	-	25
102- M 85	06°29'N	54°02'W	27.17	13	40
103- M 86	06°36'N	54°00'W	27.72	26	48
104- L 87	06°28'N	54°15'W	27.56	-	33
105- M 88	06°43'N	53°59'W	27.56	23	50
106- M 89	06°50'N	53°55'W	27.67	20	58
107- L 90	06°48'N	54°11'W	27.78	12,23	49
108- J 92	06°22'N	54°48'W	27.78	7	28
109- I 93	06°22'N	55°01'W	28.22	- (5)	34
110- I 94	06°14'N	55°03'W	28.00	- (6)	15
111- L 95	07°18'N	54°04'W	28.44	78	103
112- L 96	07°28'N	54°03'W	28.33	73 (30)	230
113- M 97	07°18'N	53°49'W	28.06	78 (38)	150
114- M 98	07°11'N	53°51'W	28.00	68 (35)	97
116- M 99	07°03'N	53°52'W	28.06	60	90
117- K100	07°36'N	54°18'W	27.78	77 (32)	95
118- K101	07°25'N	54°21'W	27.78	68 (40)	130
119- K102	07°11'N	54°23'W	27.78	53 (23)	93
120- K103	06°59'N	54°25'W	27.78	48 (30)	75
121- K104A	06°47'N	54°27'W	27.39	35 (9)	60
122- K 91	06°36'N	54°30'W	28.06	8	40
123- K105A	06°27'N	54°32'W	27.44	11	25
124- K106A	06°19'N	54°33'W	27.67	10	18
125- K107A	06°15'N	54°33'W	27.78	4	16
126- K108A	06°10'N	54°34'W	27.78	-	9
127- J110	06°45'N	54°43'W	27.39	17	48
128- J111	06°53'N	54°41'W	27.78	37 (17)	55
129- J112	07°18'N	54°36'W	28.22	60 (34)	100
130- J113	07°30'N	54°35'W	27.83	70	285
131- I114	07°26'N	54°49'W	28.22	63 (40)	150
132- I115	07°13'N	54°52'W	27.78	60 (24)	93
133- I116	07°00'N	54°54'W	28.06	38 (15)	53
134- I117	06°55'N	54°54'W	27.94	46 (20)	55

Table VI (continued)

	Position		SST	Th. depth	Water depth
135- I118	06°48'N	54°55'W	27.44	35 (15)	54
136- I118A	06°41'N	54°57'W	27.56	35 (18)	40
137- I119	06°36'N	55°58'W	27.60	27 (15)	47
138- I120	06°30'N	54°59'W	27.72	15	42
139- I122	06°28'N	55°00'W	27.28	20	25
140- I 93A	06°22'N	55°00'W	26.94	15	27
141- I 94A	06°15'N	55°03'W	28.06	8	18

Table VII. Current measurements

Date	Depth (m)	Local time	Velocity (cm/sec)	Direction	
13-IV-1969	1	07.01	79	308	Station L 90
	18	07.11	35	332	
	38	07.20	11	307	
	3	08.01	62.5	333	
	18	08.09	24	330	
	40	08.23	21	352	
	3	09.01	56	322	
	18	09.13	12.5	360	
	40	09.21	32	222	
	3	10.01	66	270	
	18	10.07	17	235	
	40	10.17	25	210	
	3	10.59	63	280	
	18	11.05	30	222	
	40	11.14	29	210	
	3	15.56	88	323	
	18	16.01	24	343	
	40	16.11	28	350	
	3	17.00	100	323	
	18	17.06	42	340	
	40	17.23	17	30	

Table VII Current measurements
(continued)

	Depth	Time	Velocity	Direction	
	3	17.58	116	315	
	18	18.04	53	344	
	40	18.21	23	15	
	3	19.02	97	325	
	18	19.09	16	334	
	40	19.22	13	165	
	3	20.07	97	321	
	18	20.22	10	190	
	40	20.41	20	180	
	3	21.05	114	310	
	18	21.13	12	210	
	40	21.14	17	178	
22-IV-1969	4	19.23	44	310	Station J112
	20	19.28	5 (?)	- (?)	
	40	19.37	28	167	
	70	19.48	13	235	
	4	20.01	39	290	
	20	20.10	22	240	
	40	20.16	19	173	
	70	20.25	6	30	
	4	21.07	41	310	
	20	21.13	25	260	
	40	21.21	15	165	
	70	21.29	20	315	

Table VII Current measurements
(continued)

	Depth	Time	Velocity	Direction
	4	22.02	63	308
	20	22.08	17	240
	40	22.15	13	165
	70	22.23	7	310
	4	23.04	31	245
	20	23.10	35	256
	40	23.18	19	200
	70	23.28	17	360
23-IV-1969	4	00.02	35	275
	20	00.08	35	255
	40	00.15	29	230
	70	00.23	34	10
	4	01.01	57	228
	20	01.07	43	240
	40	01.14	51	170
	70	01.22	34	150
	4	02.04	39	280
	20	02.10	39	193
	40	02.18	14	270
	70	02.25	12	210
	4	03.02	35	85 (?)
	20	03.07	21	240
	40	03.13	26	242
	70	03.22	16	340

Table VII Current measurements
(continued)

Depth	Time	Velocity	Direction
4	04.06	38	234
20	04.12	12	340
40	04.19	13	165
70	04.27	9	160
4	05.00	39	230
20	05.06	36	10
40	05.13	33	50
70	05.21	23	260
4	06.03	32	230
20	06.08	4	160
40	06.14	11	200
70	06.22	3	-
4	06.58	38	185
20	07.03	30	220
40	07.18	32	280
70	07.23	18	110