

OCEANOGRAPHICAL OBSERVATIONS
IN THE PACIFIC OCEAN IN 1964
H.M.A.S. *GASCOYNE*
Cruise G 1/64

OCEANOGRAPHICAL CRUISE REPORT
NO. 32

DIVISION OF FISHERIES AND OCEANOGRAPHY
COMMONWEALTH SCIENTIFIC AND INDUSTRIAL
RESEARCH ORGANIZATION, AUSTRALIA 1967

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AUSTRALIA

MELBOURNE, 1967

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CSIRO Aust. Oceanogr. Cruise Rep. No. 32

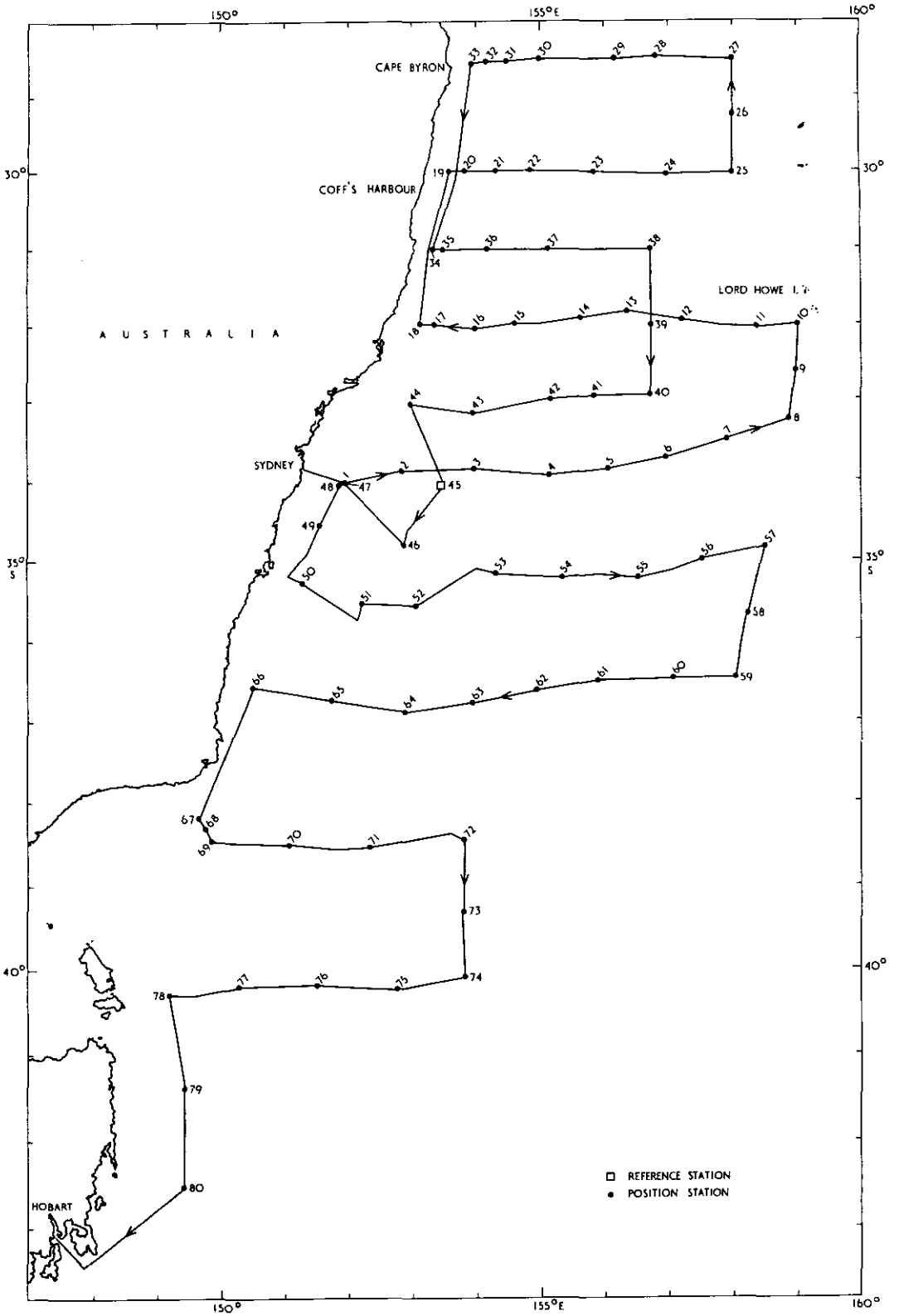


Fig. 1 Track chart

OCEANOGRAPHICAL CRUISE REPORT

No. 32

Oceanographical Observations in the Pacific Ocean in 1964

H.M.A.S. Gascoyne

Cruise G1/64

January 13 - February 6, 1964

I. INTRODUCTION

This report records the data collected during the first cruise in 1964 of H.M.A.S. Gascoyne, Royal Australian Navy oceanographical frigate, in the Pacific Ocean.

Objectives

These were - to study the dynamics of the East Australian Current system; to study its chemical structure in relation to its dynamics; and to test a temperature-salinity-depth (TSD) recorder.

Itinerary

The cruise started at Sydney on January 13, worked four east-west sections north to about 28°S., then two east-west sections back to Sydney, from where the cruise continued on January 28 and worked four east-west sections south to Hobart (Fig. 1).

Scientific Personnel

B. Hamon (Cruise Leader)
F. Davies
K. Fleming

The analyses of hydrological samples were done in the ship's laboratory by Messrs Davies and Fleming. Nitrate analyses were done at Cronulla by Mr Prothero. TSD and GEK observations were made on board by Mr Hamon. The data were processed, under the direction of Mr Hedge, with computer programmes designed by Mr Crooks. The track chart was prepared by Mr Breach.

II. WORK ACCOMPLISHED

Eighty stations were worked (G1/1/64 - G1/80/64). Bathy-thermograph casts were made at 79 stations. Surface hydrology samples were collected at 29 stations, and surface and sub-surface at 51 stations. A GEK zero check was made at 75 stations.

TABLE 1

WORK DONE AT EACH STATION

Stn No.	BT	Hydrology 1	Hydrology 2	GEK Zero Check	Stn No.	BT	Hydrology 1	Hydrology 2	GEK Zero Check
1	+		1500		33	+	+		+
2	+		2500	+	34		+		
3	+		2500	+	35	+		1500	+
4	+		1500	+	36	+	+		+
5	+	+		+	37	+		2500	+
6	+	+		+	38	+		2000	+
7	+	+			39	+	+		+
8	+		2500	+	40	+		2500	+
9	+	+		+	41	+	+		+
10	+		2500	+	42	+		2200	+
11	+	+		+	43	+		2500	+
12	+		2400	+	44	+		1400	+
13	+	+		+	45	+		4300	+
14	+		2000	+	46	+		2400	+
15	+		2300	+	47	+		1500	+
16	+	+		+	48	+	+		+
17	+		1500	+	49	+	+		+
18	+	+		+	50	+		1100	+
19	+	+			51	+		2500	+
20	+		1500	+	52	+		2000	+
21	+	+		+	53	+		2500	+
22	+		2500	+	54	+	+		+
23	+		2400	+	55	+		2400	+
24	+	+		+	56	+	+		+
25	+		1500	+	57	+		2500	+
26	+	+		+	58	+	+		+
27	+		2500	+	59	+		2500	+
28	+	+		+	60	+	+		+
29	+		2500	+	61	+		2400	+
30	+		2100	+	62	+	+		+
31	+	+		+	63	+		2500	+
32	+		1500	+	64	+		2500	+

Stn No.	BT	Hydrology		GEK Zero Check	Stn No.	BT	Hydrology		GEK Zero Check
		1	2				1	2	
65	+		2500	+	73	+	+		+
66	+		1500	+	74	+		2500	+
67	+	+			75	+		2500	+
68	+	+		+	76	+		2500	+
69	+		1500	+	77	+		2400	+
70	+		2500	+	78	+		1500	+
71	+		2300	+	79	+		2500	+
72	+		2500	+	80	+		2500	+

BT Bathythermograms
Hydrology 1 Surface
 2 Surface to depth (m)
GEK Geomagnetic electrokinetograph

III. METHOD OF COLLECTION AND ANALYSIS OF SAMPLES

1. Physics

Temperature.- Water temperatures were taken with deep-sea reversing thermometers; protected thermometers with a range of -2°C to 30°C , and unprotected thermometers with a range of -2°C to 30°C , or -4°C to 60°C . The accuracy of the temperatures is considered to be ± 0.03 deg C.

GEK.- The circuit and method of use were the same as given in CSIRO Aust. (1963). However, after Station 18 a course change, lasting 4 min, was made every hour, to obtain the total surface current.

Bathythermograms.- A 900 ft bathythermograph was used at each of the stations indicated in Table 1. A photograph of each slide is filed at Cronulla.

Thermometric Depth.- Depth calculations were made by the method described by Pollak (1950), and are considered accurate to ± 15 m at depths greater than 1000 m, and to 1% above that depth.

Sigma-t.- Sigma-t values were calculated, by computer, using the Table of Sigma-t given by La Fond (1951).

2. Chemistry

Salinity.- Salinity was measured on board with an inductive salinometer (Brown and Hamon 1961).

Dissolved Oxygen.- A version of the standard Winkler method was used to determine the amount of dissolved oxygen in the sea-water samples. The version used is a modification of that described by Thompson and Robinson (1939) and differs in some respects from the version by Jacobsen, Robinson, and Thompson (1950). Potassium iodate was used at the iodometric standard and the reagents necessary to fix the oxygen in solution were used at different concentrations. Duplicate titrations were made on approximately every tenth sample. Saturation values were calculated, by computer, using the simpler of the equations given by Richards and Corwin (1956) -

$$O_2(\% \text{ Satn.}) = \frac{O_2(\text{ml/l}) \times (33.5 + T^\circ\text{C}) \times 100}{332.4 - (1.854 \times S\text{‰})} \cdot$$

Inorganic Phosphate.- The method of Atkins (1923) was used with 1 ml molybdate reagent (300 ml 10% w/v ammonium molybdate and 100 ml 50% v/v sulphuric acid) and 0.1 ml 1% w/v stannous chloride diluted afresh from a 40% stock solution in hydrochloric acid, which was kept under paraffin. The reagents were automatically dispensed by a piston dispenser.

Standard phosphate solutions were made up in distilled water. At air temperatures less than 25°C analyses were carried out in batches of 10; readings were begun within 10 min of adding reagents, and completed within 10 min. At air temperatures greater than 25°C batches of 6 were analysed; readings were begun within 5 min of adding reagents and completed within 7 min. Each batch was compared with a distilled water blank and a 0.65 µg-atom/l standard in a Hilger Spekker absorptiometer using 4 cm cells and Ilford 608 filters. Each day a complete calibration was made using standards up to 3.25 µg-atom/l. Results are given as µg-atom/l without any correction for salt error and are precise to $\pm 10\%$ for values less than 0.5 µg-atom/l and $\pm 5\%$ for higher values. To correct for salt effects, the results given can be multiplied by 1.15.

Total Phosphorus.- 100 ml samples were drawn from the Nansen bottles into 150 ml Pyrex conical flasks, 0.2 ml of 72% v/v perchloric acid was added and digestion at 200°-250°C carried out immediately on a sand tray. After evaporation of water, heating was continued until fuming of the salt residue

commenced. The samples were then allowed to cool and 100 ml of distilled water and 2 drops of 2% w/v phenolphthalein were added. If alkaline, perchloric acid was added until a slight acidity persisted. The flasks were allowed to stand for about 24 hr to allow the salts to dissolve. Phosphate was then determined as described above for inorganic phosphate. Results are given as $\mu\text{g-atom/l}$, without salt correction. To correct for salt effects, the results given can be multiplied by 1.15.

Nitrate.- After collection, water samples were stored in plastic bottles and preserved with 2 drops of saturated HgCl_2 . Nitrate was determined at Cronulla by the strychnidine method (Rochford 1947). The reagent was prepared by the addition of 0.64 g strychnidine to a litre of nitrate-free sulphuric acid. 5 ml of this reagent were added, with minimum agitation, to 5 ml seawater or standard nitrate solution. The standards were made up in a mixture of equal volumes of artificial seawater and nitrate-free sulphuric acid. The standards and samples were shaken to distribute the reagent, and the colour developed for 2 hr. The solutions were read in a Unicam SP 600 spectrophotometer at a wavelength of 530 $\text{m}\mu$ using a 5 mm cell. Samples with an absorbance greater than that of the standard corresponding to 14.4 $\mu\text{g-atom/l}$ were diluted with artificial seawater - sulphuric acid mixture before reading. Results are given in $\mu\text{g-atom/l}$.

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IV. DATA SHEETS

The data were listed in a C.D.C. 3600 Computer. An explanation of the headings is given at the beginning of the surface hydrology listing.

DATA
PART 1
HYDROLOGY
SURFACE SAMPLES

EXPLANATION OF HEADINGSParts 1 and 2Hydrology

STATION	Gives the station identification. For example, G1/1/64 signifies the 1st station worked by <u>Gascoyne</u> in 1964, on her 1st cruise for that year
DATE	Given as day/month/year
TIME	Given in Zone Time, and is the time at the beginning of the first cast. Zone Time throughout the cruise was Eastern Australian Standard Time, G.M.T. + 10 hr, Code K
LATITUDE LONGITUDE	Given in degrees and minutes
SONIC DEPTH	Given in metres, measured at standard sound velocity of 800 fm (1463 m) per second
AIR TEMP. WET DRY	Air temperatures recorded from wet and dry bulb thermometers in °C
WIND DIR. SP.	Wind direction and speed are coded using Tables 8 and 9 in U.S. Hydrogr. Office (1955)
ANEM. HEIGHT	The average height of the anemometer above sea level, given in metres
CLOUD TYPE AMT.	Cloud type and amount are coded using Tables 2 and 3 in U.S. Hydrogr. Office (1955)
VIS.	Visibility is coded using Table 4 in U.S. Hydrogr. Office (1955)
SEA DIR. AMT.	Sea direction and amount are coded using Tables 5 and 8 in U.S. Hydrogr. Office (1955)
SWELL DIR. AMT.	Sea swell direction and amount are coded using Tables 6 and 8 in U.S. Hydrogr. Office (1955)

BAROM. and ATMOS. PRESSURE	Atmospheric pressure given in millibars
WIRE ANGLES CAST 1 CAST 2 CAST 3	Wire angles are measured at the surface and expressed in degrees for each cast
CAST	The cast number corresponding to the wire angle is shown
DEPTH	Actual sampling depth, given in metres
TEMP.	Sea temperatures recorded in °C
SALINITY	Given in parts per thousand
SIGMA-T	Sigma-t to 2 decimal places
OXYGEN	Given in ml/l
OXYGEN % SAT.	Oxygen percentage saturation
INORG. P, TOTAL P, and NITRATE	Given in $\mu\text{g-atom/l}$
* and ***	Indicate no data available

CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND DN. AMT. SEA DN. AMT. SWELL DN. AMT. WEA. VIS. BAROM.

1	1	64	1	13	1246	K 34	01 S 151	55 E	22.3	35.55	02	2	00	2	01	4	7	1005.0
1	1	64	1	13	1900	K 33	52 S 152	51 E	21.2	35.47	34	3	35	3	35	1	7	1001.1
1	1	64	1	14	0135	K 33	52 S 153	58 E	21.7	35.56	01	5	00	3	35	4	5	998.0
1	1	64	1	14	0823	K 33	55 S 155	08 E	22.9	35.40	99	3	99	3	35	4	5	999.0
1	1	64	1	14	1415	K 33	51 S 156	04 E			14	3	18	3	35	4	6	992.0
1	1	64	1	14	1800	K 33	42 S 156	57 E			16	3	14	2	03	4	6	991.2
1	1	64	1	14	2300	K 33	29 S 157	53 E			19	5	19	3	04	4	7	997.5
1	1	64	1	15	0300	K 33	16 S 158	53 E	21.8	35.55	20	3	99	2	01	4	7	1001.5
1	1	64	1	15	0849	K 32	34 S 158	57 E			00	0	00	0	34	4	7	1005.0
1	1	64	1	15	1159	K 32	00 S 159	00 E	23.7	35.54	36	1	00	0	34	1	8	1005.5
1	1	64	1	15	1750	K 32	03 S 158	20 E			26	5	26	3	26	1	7	1006.2
1	1	64	1	15	2357	K 31	56 S 157	10 E	24.6	35.36	19	5	19	3	23	4	7	1011.0
1	1	64	1	16	0515	K 31	50 S 156	21 E			18	4	18	3	21	4	8	1011.0
1	1	64	1	16	1030	K 31	56 S 155	37 E	24.4	35.51	19	3	18	2	20	1	8	1015.1
1	1	64	1	16	1550	K 31	59 S 154	35 E	23.0	35.48	19	3	00	0	22	1	8	1014.7
1	1	64	1	16	2047	K 32	04 S 153	58 E			05	1	00	0	23	1	8	1015.8
1	1	64	1	16	2350	K 32	00 S 153	21 E	22.5	35.52	03	2	00	0	23	1	8	1014.8
1	1	64	1	17	0230	K 31	59 S 153	08 E			02	2	00	0	18	1	8	1013.2
1	1	64	1	17	1400	K 30	01 S 153	34 E			04	5	04	3	13	1	8	1012.4
1	1	64	1	17	1700	K 30	02 S 153	49 E	24.5	35.49	03	4	03	3	15	1	8	1012.8
1	1	64	1	17	2015	K 30	04 S 154	18 E			03	4	03	3	15	1	8	1014.4
1	1	64	1	17	2330	K 30	01 S 154	53 E	23.2	35.61	04	5	04	3	15	1	8	1014.0
1	1	64	1	18	0700	K 30	03 S 155	54 E	23.5	35.56	01	4	01	2	16	1	8	1013.9
1	1	64	1	18	1415	K 30	03 S 156	58 E			02	3	02	2	17	1	8	1012.2
1	1	64	1	18	1920	K 30	02 S 157	59 E	23.9	35.57	04	3	02	2	17	1	8	1013.0
1	1	64	1	19	0027	K 29	16 S 158	00 E			01	2	00	2	16	1	8	1013.0
1	1	64	1	19	0445	K 28	32 S 158	01 E	24.7	35.53	00	2	00	2	06	1	8	1013.0
1	1	64	1	19	1115	K 28	28 S 156	51 E			04	2	02	2	06	1	8	1016.0
1	1	64	1	19	1530	K 28	30 S 156	10 E	26.4	35.51	04	1	00	0	09	1	8	1013.5
1	1	64	1	19	2250	K 28	32 S 154	59 E	25.7	35.49	03	3	02	2	06	1	8	1014.0
1	1	64	1	20	0300	K 28	34 S 154	30 E			00	2	00	2	04	1	8	1012.5
1	1	64	1	20	0530	K 28	35 S 154	09 E	24.7	35.48	33	2	00	0	05	1	8	1013.5
1	1	64	1	20	0720	K 28	36 S 153	57 E			33	2	00	0	05	1	8	1013.9
1	1	64	1	20	1912	K 31	01 S 153	19 E			01	3	01	2	03	1	6	1010.0
1	1	64	1	20	2015	K 31	02 S 153	30 E	24.4	35.54	01	2	01	2	03	1	8	1010.0
1	1	64	1	21	0045	K 31	01 S 154	09 E			36	2	36	2	01	1	7	1010.0
1	1	64	1	21	0545	K 31	01 S 155	06 E	23.9	35.61	32	2	02	2	04	1	7	1011.0
1	1	64	1	21	1600	K 31	01 S 156	44 E	24.0	35.54	16	5	16	4	16	1	8	1013.9
1	1	64	1	21	2200	K 31	58 S 156	44 E			14	2	14	2	12	1	8	1018.0
1	1	64	1	22	0420	K 32	57 S 156	44 E	22.9	35.21	99	1	00	0	23	1	8	1018.0

CRUISE NUMBER	STATION NUMBER	YF.	MTH.	DAY	TIME	Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND DN. AMT.	SEA DN. AMT.	SWELL DN. AMT.	WEA.	VIS.	PAROM.
1	41	64	1	22	0945	K 32	57 S	155	50 E		00	00	21	1	8	1020.0
1	42	64	1	22	1400	K 33	00 S	155	10 E	35.53	06	2	17	1	8	1018.3
1	43	64	1	22	2025	K 33	10 S	153	57 E	35.59	05	3	19	1	8	1015.9
1	44	64	1	23	0240	K 33	03 S	152	59 E	35.58	03	2	09	1	8	1011.5
1	45	64	1	23	0900	K 34	03 S	153	28 E	35.36	00	4	02	3	7	1012.9
1	46	64	1	23	1635	K 34	50 S	152	50 E	35.57	18	2	00	1	8	1012.3
1	47	64	1	24	2300	K 34	03 S	151	55 E	35.57	14	1	00	0	6	1012.5
1	48	64	1	28	1630	K 34	01 S	151	51 E		10	1	17	1	6	1019.0
1	49	64	1	28	1950	K 34	33 S	151	33 E		12	0	19	2	8	1018.9
1	50	64	1	29	0045	K 35	17 S	151	17 E	35.58	08	0	16	1	8	1018.0
1	51	64	1	29	0650	K 35	33 S	152	12 E	35.56	03	1	00	0	8	1018.5
1	52	64	1	29	1240	K 35	35 S	153	05 E	35.58	07	2	08	1	8	1017.9
1	53	64	1	29	2130	K 35	10 S	154	18 E	35.52	06	3	07	3	8	1017.0
1	54	64	1	30	0400	K 35	13 S	155	20 E		07	3	10	1	7	1016.5
1	55	64	1	30	1000	K 35	14 S	156	32 E	35.55	07	4	08	2	8	1018.9
1	56	64	1	30	1530	K 35	00 S	158	29 E	35.53	06	4	08	3	8	1018.0
1	57	64	1	30	2035	K 35	50 S	158	29 E	35.53	06	3	06	2	8	1019.0
1	58	64	1	31	0245	K 35	41 S	158	12 E	35.51	06	1	08	1	8	1018.0
1	59	64	1	31	0730	K 36	30 S	158	01 F	35.51	09	2	00	1	8	1018.0
1	60	64	1	31	1315	K 36	31 S	157	02 E		03	3	03	2	8	1015.7
1	61	64	1	31	1900	K 36	32 S	155	52 E	35.56	04	3	04	2	8	1014.2
1	62	64	1	31	2345	K 36	39 S	154	57 E		03	3	03	2	8	1013.0
1	63	64	2	1	0430	K 36	47 S	153	54 E	35.38	02	5	02	3	8	1013.0
1	64	64	2	1	1034	K 36	55 S	152	51 E	35.54	00	3	00	1	8	1013.2
1	65	64	2	1	1712	K 36	46 S	151	44 E	35.61	24	1	01	1	7	1013.0
1	66	64	2	2	0053	K 36	35 S	150	28 E	35.58	19	1	20	4	7	1015.0
1	67	64	2	2	1615	K 38	12 S	149	39 E		13	1	19	1	7	1014.0
1	68	64	2	2	1700	K 38	20 S	149	45 E		13	1	21	1	7	1014.0
1	69	64	2	2	1818	K 38	29 S	149	51 E	35.62	10	1	21	1	7	1014.0
1	70	64	2	3	0100	K 38	30 S	151	03 E	35.58	16	1	20	1	8	1014.4
1	71	64	2	3	0845	K 38	33 S	152	20 E	35.64	02	0	20	1	7	1014.0
1	72	64	2	3	1750	K 38	27 S	153	48 E	35.62	02	0	03	1	7	1017.5
1	73	64	2	4	0001	K 39	19 S	153	47 E	35.62	04	3	35	5	8	1017.0
1	74	64	2	4	0515	K 40	06 S	153	48 E		03	0	02	1	7	1017.5
1	75	64	2	4	1105	K 40	11 S	152	45 E	35.54	02	4	02	0	7	1016.0
1	76	64	2	4	1745	K 40	15 S	151	29 E	35.52	01	3	00	1	8	1015.0
1	77	64	2	5	0026	K 40	12 S	150	16 E	35.65	36	3	02	1	7	1013.5
1	78	64	2	5	0645	K 40	19 S	149	09 E	35.63	34	3	02	1	7	1013.5
1	79	64	2	5	1445	K 41	25 S	149	09 E	35.63	17	4	02	1	7	1016.5
1	80	64	2	5	2215	K 42	34 S	149	23 E	35.21	15	5	19	4	8	1019.5
1											10	3	12	1	7	1022.0

DATA
PART 2
HYDROLOGY
DEEP STATIONS

STATION DATE TIME LATITUDE LONGITUDE
 G 1/ 1/64 13/ 1/64 1246 K 34 01 S 151 55 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

1829 22.8 23.9 02 2 11 4 7 7 00 2 01 4 1005.0 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	22.30	35.550	24.57	4.94	103	0.16	***	***
2	25	22.05	35.542	24.63	4.91	102	0.15	***	***
2	50	22.02	35.542	24.64	4.86	101	0.17	***	***
2	75	20.73	35.556	25.01	4.74	96	0.17	***	***
2	100	19.73	35.586	25.30	4.47	89	0.41	***	***
2	150	18.97	35.582	25.49	4.70	93	0.40	***	***
2	200	18.42	35.582	25.63	4.15	81	0.56	***	***
2	300	16.01	35.500	26.15	4.75	88	0.55	***	***
1	500	11.27	35.039	26.78	4.38	73	1.12	***	***
1	700	8.09	34.609	26.97	4.37	68	1.56	***	***
1	900	6.15	34.484	27.15	4.24	63	1.88	***	***
1	1100	4.73	34.481	27.32	3.91	56	2.13	***	***
1	1300	3.69	34.529	27.46	3.61	50	2.25	***	***
1	1500	2.95	34.596	27.59	3.45	47	2.25	***	***

STATION 6 1/ 2/64 DATE 13/ 1/64 TIME 1900 K LATITUDE 33 52 S LONGITUDE 152 51 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL. ATMDS. WIRE ANGLES
 DEPTH WFT DRY DIR, SP. HEIGHT TYPE AMT. DIR, AMT. DIR, AMT. PRESSURE CAST1 CAST2 CAST3

4755 22.8 23.3 34 3 11 4 7 35 3 35 1 1001.1 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	21.22	35.468	24.81	5.04	103	0.08	***	***
2	25	19.86	35.447	25.16	5.32	106	0.10	***	***
2	50	17.16	35.490	25.87	4.40	84	0.44	***	***
2	75	16.14	35.469	26.09	4.59	85	0.46	***	***
2	100	15.36	35.451	26.26	4.91	90	0.44	***	***
2	150	14.02	35.369	26.48	4.87	87	0.57	***	***
2	200	13.36	35.309	26.58	4.90	86	0.65	***	***
2	300	11.34	35.014	26.74	4.48	75	1.03	***	***
2	500	8.56	34.653	26.94	4.38	69	1.39	***	***
1	700	7.12	34.527	27.05	4.27	65	1.66	***	***
1	900	5.46	34.468	27.22	4.14	60	1.88	***	***
1	1100	4.37	34.490	27.36	3.81	54	2.06	***	***
1	1300	3.45	34.540	27.50	3.55	49	2.18	***	***
1	1500	2.87	34.601	27.60	3.48	47	2.20	***	***
1	2000	2.28	34.683	27.72	3.83	51	2.15	***	***
1	2500	1.87	34.727	27.79	4.11	54	2.11	***	***

STATION G 1/ 3/64 DATE 14/ 1/64 TIME 0135 K LATITUDE 33 52 S LONGITUDE 153 58 E

4663 22.2 21.7 01 5 11 * 8 * 5 00 3 35 4 998.0 5 5 *
 SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	CXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	21.65	35.560	24.76	5.03	104	0.10	***	***
2	25	21.50	35.566	24.81	5.06	104	0.10	***	***
2	50	16.96	35.472	25.90	4.59	87	0.39	***	***
2	75	15.49	35.408	26.20	4.45	82	0.56	***	***
2	100	14.23	35.290	26.38	4.28	77	0.69	***	***
2	150	12.87	35.200	26.59	4.54	79	0.80	***	***
2	200	12.21	35.133	26.67	4.64	79	0.82	***	***
2	300	10.27	34.870	26.82	4.42	72	1.09	***	***
2	500	7.70	34.562	27.00	4.41	68	1.47	***	***
1	700	6.13	34.477	27.14	4.17	62	1.73	***	***
1	900	4.96	34.469	27.28	4.04	58	1.86	***	***
1	1100	3.96	34.511	27.42	3.72	52	2.06	***	***
1	1300	3.34	34.559	27.52	3.42	47	2.15	***	***
1	1500	2.85	34.602	27.60	3.44	47	2.15	***	***
1	2000	2.20	34.687	27.73	3.85	51	2.02	***	***
1	2500	1.80	34.727	27.79	4.17	55	1.98	***	***

STATION 6 1/ 4/64 DATE 14/ 1/64 TIME 0823 K LATITUDE 33 55 S LONGITUDE 155 08 E

SONIC AIR TEMP. WIND ANEM. CLOUD SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4755 22.8 23.3 99 3 11 * 8 5 99 3 35 4 099.0 20 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NIITRA'E
2	0	22.91	35.402	24.28	4.70	99	0.15	***	***
2	25	22.85	35.501	24.38	4.68	99	0.19	***	***
2	50	21.13	35.594	24.93	5.02	103	0.16	***	***
2	75	20.17	35.592	25.19	4.54	91	0.24	***	***
2	100	19.66	35.600	25.33	4.76	95	0.22	***	***
2	150	18.37	35.580	25.64	4.39	85	0.40	***	***
2	200	16.56	35.573	26.08	4.17	78	0.59	***	***
2	300	14.04	35.243	26.58	4.08	73	0.74	***	***
2	500	10.02	34.841	26.84	4.67	76	1.07	***	***
1	505	9.50	34.766	26.87	4.59	74	1.16	***	***
1	645	8.12	34.607	26.97	4.39	68	1.45	***	***
1	780	6.70	34.496	27.08	4.29	64	1.67	***	***
1	510	5.58	34.465	27.20	4.08	59	1.79	***	***
1	1065	4.73	34.476	27.31	3.94	56	1.94	***	***
1	1300	3.44	34.539	27.50	3.61	50	2.14	***	***
1	1520	2.82	34.594	27.60	3.49	47	2.12	***	***

STATION DATE TIME LATITUDE LONGITUDE
 G 1/ 8/64 15/ 1/64 0300 K 33 16 S 158 53 E

SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGL'S
 DEPTH WFT DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

3840 18.9 21.1 20 3 11 4 8 7 99 2 01 4 1001.5 8 10 *

CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRA P
2	0	21.77	35.550	24.72	4.96	103	0.07	0.23	***
2	23	21.74	35.552	24.73	4.89	101	0.06	***	***
2	46	19.03	35.571	25.47	4.95	98	0.16	0.34	***
2	70	17.90	35.541	25.73	4.55	88	0.31	***	***
2	93	17.09	35.513	25.90	4.56	87	0.38	0.56	***
2	140	15.73	35.427	26.16	4.63	85	0.51	***	***
2	187	14.84	35.385	26.32	4.43	80	0.56	0.65	***
2	283	13.27	35.265	26.56	4.75	83	0.63	0.75	***
2	482	9.51	34.765	26.87	4.49	72	1.17	1.32	***
1	670	7.10	34.525	27.05	4.30	65	1.54	1.80	***
1	865	5.71	34.469	27.19	4.14	60	1.74	2.04	***
1	1063	4.46	34.629	27.46	4.06	57	1.69	1.87	***
1	1261	3.65	34.531	27.47	3.56	49	1.99	2.12	***
1	1460	3.09	34.576	27.56	3.40	46	2.12	2.27	***
1	1560	2.33	34.663	27.70	3.72	50	2.04	2.17	***
1	2460	1.84	34.718	27.78	4.10	54	1.94	2.20	***

STATION G 1/ 10/64 DATE 15/ 1/64 TIME 1159 K LATITUDE 32 00 S LONGITUDE 159 00 E

SONIC AIR TEMP. WIND ANEM. CLOUD SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

3475 20.6 24.4 36 1 11 4 6 8 00 0 34 1 1005.5 5 12 *

CAS1	DEPTH	TEMP.	SALINITY	SIRMA-T	OXYGEN	CXYGEN % SAT.	INORG. P	TOTAL P	NITRA E
2	0	23.68	35.545	24.17	4.79	103	0.14	***	***
2	25	23.33	35.541	24.27	4.82	103	0.13	***	***
2	50	21.72	35.531	24.72	4.95	103	0.14	***	***
2	75	21.00	35.565	24.94	4.64	95	0.20	***	***
2	100	20.45	35.586	25.11	4.60	93	0.23	***	***
2	150	19.57	35.590	25.34	4.23	84	0.26	***	***
2	200	18.93	35.585	25.50	4.50	89	0.32	***	***
2	300	16.96	35.507	25.93	4.10	78	0.49	***	***
2	500	11.93	35.081	26.68	4.49	76	0.83	***	***
1	700	8.88	34.685	26.91	4.39	69	1.25	***	***
1	900	6.47	34.509	27.13	4.29	64	1.59	***	***
1	1100	5.08	34.471	27.27	4.07	58	1.86	***	***
1	1300	4.05	34.511	27.41	3.67	51	1.94	***	***
1	1500	3.21	34.569	27.54	3.50	49	2.04	***	***
1	2000	2.35	34.665	27.70	3.68	48	2.04	***	***
1	2500	1.90	34.715	27.77	4.08	54	1.96	***	***

STATION G 1/ 12/64 DATE 15/ 1/64 TIME 2357 K LATITUDE 31 56 S LONGITUDE 157 10 E

SONIC AIR TEMP. WIND ANEM. CLOUD SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

3383 17.2 21.1 19 5 11 * * 7 19 3 23 4 1011.0 10 10 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	24.57	35.361	23.77	4.54	99	0.14	***	***
2	22	24.56	35.378	23.78	4.61	100	0.12	***	***
2	45	24.57	35.386	23.79	4.67	102	0.10	***	***
2	67	24.56	35.380	23.78	4.61	100	0.12	***	***
2	90	24.39	35.391	23.84	4.69	102	0.12	***	***
2	135	19.81	35.538	25.24	3.52	70	0.57	***	***
2	180	18.44	35.518	25.58	3.60	70	0.59	***	***
2	271	16.22	35.471	26.08	4.61	86	0.45	***	***
2	452	11.84	35.033	26.66	4.32	73	0.89	***	***
1	638	9.03	34.705	26.90	4.48	71	1.27	***	***
1	829	7.25	34.718	27.18	4.25	65	1.56	***	***
1	1022	5.65	34.533	27.25	4.15	61	1.79	***	***
1	1216	4.51	34.465	27.33	3.83	54	1.97	***	***
1	1411	3.64	34.482	27.43	3.54	49	2.05	***	***
1	1906	2.48	34.530	27.58	3.56	48	2.12	***	***
1	2405	2.04	34.638	27.70	3.96	52	2.02	***	***

STATION G 1/ 14/64 DATE 16/ 1/64 TIME 1030 K LATITUDE 31 56 S LONGITUDE 155 37 E

SONIC AIR TEMP. WIND ANEM. CLOUD SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4572 17.2 25.0 19 .3 11 8 2 8 18 2 20 1 1015.1 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	24.42	35.509	23.92	4.72	103	0.13	***	***
2	25	24.30	35.513	23.96	4.67	101	0.13	***	***
2	50	22.67	35.571	24.48	4.93	104	0.14	***	***
2	75	21.71	35.582	24.76	5.06	105	0.14	***	***
2	100	20.68	35.605	25.06	4.84	98	0.17	***	***
2	150	19.53	35.590	25.35	4.51	90	0.31	***	***
2	200	18.84	35.590	25.53	4.51	89	0.34	***	***
2	300	17.23	35.521	25.88	4.15	79	0.51	***	***
2	500	12.66	35.127	26.58	4.26	74	0.85	***	***
1	691	9.29	34.723	26.87	4.32	69	1.30	***	***
1	889	7.12	34.526	27.05	4.30	65	1.53	***	***
1	1087	5.66	34.469	27.20	4.07	59	1.82	***	***
1	1287	4.55	34.482	27.34	3.88	55	1.94	***	***
1	1585	2.46	34.649	27.68	3.57	48	2.07	***	***

STATION 6 1/ 15/64 DATE 16/ 1/64 TIME 1550 K LATITUDE 31 59 S LONGITUDE 154 35 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4480 17.8 23.3 19 3 11 1 2 * 00 0 22 1 1014.7 15 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	23.01	35.485	24.32	4.90	104	0.09	***	***
2	25	22.71	35.473	24.39	4.95	104	0.08	***	***
2	50	21.15	35.552	24.89	5.30	109	0.09	***	***
2	75	19.90	35.559	25.23	5.16	103	0.11	***	***
2	100	19.07	35.556	25.45	4.30	85	0.42	***	***
2	150	16.68	35.497	25.99	5.28	99	0.27	***	***
2	200	14.95	35.412	26.32	4.78	87	0.51	***	***
2	300	12.48	35.139	26.62	4.45	77	0.82	***	***
2	500	9.47	34.763	26.88	4.56	73	1.18	***	***
1	646	7.58	34.561	27.01	4.36	67	1.49	***	***
1	830	6.29	34.489	27.13	4.27	63	1.73	***	***
1	1015	5.15	34.470	27.26	4.15	60	1.87	***	***
1	1200	4.37	34.487	27.36	3.85	54	1.99	***	***
1	1384	3.65	34.533	27.47	3.68	51	2.02	***	***
1	1645	2.54	34.637	27.66	3.60	48	2.11	***	***
1	2306	2.09	***	***	4.02	***	2.01	***	***

STATION 6 1/ 17/64 DATE 16/ 1/64 TIME 2350 K LATITUDE 32 00 S LONGITUDE 153 21 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

2103 17.8 21.7 03 2 11 * * * 8 00 0 23 1 1014.8 5 * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	22.49	35.519	24.49	4.88	103	0.15	***	***
1	25	22.33	35.518	24.54	4.95	104	0.15	***	***
1	50	21.19	35.552	24.88	5.12	105	0.18	***	***
1	75	19.91	35.578	25.24	4.57	92	0.30	***	***
1	100	19.22	35.574	25.42	4.57	90	0.31	***	***
1	150	18.54	35.578	25.60	4.28	84	0.49	***	***
1	200	17.16	35.526	25.90	4.27	81	0.51	***	***
1	300	13.76	35.287	26.48	4.50	80	0.71	***	***
1	500	9.39	34.748	26.88	4.44	71	1.25	***	***
1	700	7.20	34.532	27.04	4.28	65	1.61	***	***
1	900	5.54	34.469	27.21	4.11	60	1.76	***	***
1	1100	4.27	34.493	27.38	3.83	54	1.98	***	***
1	1300	3.46	34.548	27.50	3.51	48	2.11	***	***
1	1500	2.84	34.600	27.60	3.45	47	2.13	***	***

STATION G 1/ 20/64 DATE 17/ 1/64 TIME 1700 K LATITUDE 30 02 S LONGITUDE 153 49 E

SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGLES
 .DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

2012 22.8 20.3 03 4 11 * * 8 03 3 15 1 1012.8 5 * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	24.54	35.489	23.87	4.73	103	0.13	***	***
1	25	24.27	35.506	23.96	4.73	103	0.13	***	***
1	49	23.04	35.493	24.32	4.91	104	0.14	***	***
1	74	21.00	35.589	24.96	4.85	99	0.15	***	***
1	99	20.22	35.589	25.17	4.50	91	0.22	***	***
1	149	19.17	35.593	25.45	4.45	88	0.32	***	***
1	199	18.40	35.583	25.64	4.38	85	0.38	***	***
1	298	15.88	35.449	26.14	4.44	82	0.50	***	***
1	496	11.08	34.982	26.77	4.45	74	0.97	***	***
1	693	8.04	34.627	27.00	4.40	68	1.40	***	***
1	889	6.03	34.500	27.17	4.27	63	1.66	***	***
1	1085	4.74	34.482	27.32	3.97	57	1.88	***	***
1	1281	3.80	34.527	27.45	3.62	50	2.00	***	***
1	1477	3.13	34.589	27.57	3.45	47	2.07	***	***

STATION G 1/ 22/64 DATE 17/ 1/64 TIME 2330 K LATITUDE 30 01 S LONGITUDE 154 53 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH MET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4389 20.6 21.1 04 5 11 * * 8 04 3 15 1 1014.0 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	23.24	35.606	24.34	4.92	105	0.08	**	**
2	25	23.18	35.639	24.38	4.91	105	0.08	**	**
2	50	22.10	35.668	24.72	5.14	107	0.15	**	**
2	75	20.09	35.617	25.23	5.08	102	0.16	**	**
2	100	19.40	35.588	25.39	4.50	89	0.34	**	**
2	150	18.47	35.586	25.62	4.56	89	0.38	**	**
2	200	17.61	35.560	25.81	4.33	83	0.48	**	**
2	300	15.25	34.923	25.88	4.28	78	0.67	**	**
2	500	10.82	34.607	26.52	4.40	73	1.09	**	**
1	700	8.05	34.606	26.98	4.38	68	1.46	**	**
1	900	6.18	34.486	27.14	4.25	63	1.67	**	**
1	1100	4.82	34.462	27.29	4.01	57	1.87	**	**
1	1300	3.78	34.567	27.49	3.62	50	2.04	**	**
1	1500	3.06	34.581	27.57	3.46	47	2.05	**	**
1	2000	2.33	34.672	27.70	3.79	51	2.06	**	**
1	2500	1.90	34.720	27.78	4.10	54	1.98	**	**

STATION G 1/ 23/64 DATE 18/ 1/64 TIME 0700 K LATITUDE 30 03 S LONGITUDE 155 54 E

SONIC AIR TEMP. WIND ANEM. CLOUD SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR, AMT. DIR, AMT. PRESSURE CAST1 CAST2 CAST3

4755 20.6 23.3 01 4 11 8 1 8 01 2 16 1 1013.9 10 10 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	23.45	35.564	24.25	4.85	104	0.08	***	***
2	25	23.45	35.590	24.27	4.85	104	0.07	***	***
2	50	22.56	35.564	24.51	4.98	105	0.08	***	***
2	75	20.45	35.582	25.10	4.90	99	0.14	***	***
2	100	19.19	35.586	25.44	4.57	90	0.28	***	***
2	150	18.24	35.578	25.67	4.38	85	0.39	***	***
2	200	17.38	35.530	25.85	4.27	82	0.46	***	***
2	300	15.30	35.375	26.21	4.23	77	0.65	***	***
2	500	10.76	34.921	26.78	4.39	73	1.09	***	***
1	656	8.06	34.606	26.98	4.38	68	1.45	***	***
1	848	6.27	34.508	27.15	4.27	63	1.66	***	***
1	1042	5.04	34.480	27.28	4.06	58	1.89	***	***
1	1237	4.02	34.518	27.42	3.74	52	2.06	***	***
1	1433	3.29	34.576	27.54	3.55	49	2.09	***	***
1	1929	2.44	34.653	27.68	3.66	49	2.09	***	***
1	2427	1.97	34.717	27.77	4.06	54	2.02	***	***

STATION G 1/ 25/64 DATE 18/ 1/64 TIME 1920 K LATITUDE 30 02 S LONGITUDE 157 59 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

1737 21.1 24.4 04 3 11 8 2 8 02 2 17 1 1013.0 10 * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	23.85	35.575	24.14	4.78	103	0.10	***	***
1	24	23.63	35.568	24.20	4.74	102	0.08	***	***
1	47	23.46	35.556	24.24	4.77	102	0.04	***	***
1	71	21.47	35.551	24.80	5.00	103	0.13	***	***
1	95	20.37	35.580	25.12	4.87	98	0.17	***	***
1	143	18.77	35.573	25.54	4.55	89	0.29	***	***
1	191	17.78	35.549	25.76	4.31	83	0.41	***	***
1	288	15.73	35.431	26.16	4.32	80	0.56	***	***
1	485	12.00	35.061	26.66	4.29	73	0.91	***	***
1	682	8.62	34.664	26.94	4.32	68	1.30	***	***
1	880	6.61	34.509	27.11	4.21	63	1.60	***	***
1	1079	5.20	34.474	27.26	4.02	58	1.81	***	***
1	1278	4.08	34.516	27.41	3.66	51	1.93	***	***
1	1477	3.26	34.572	27.54	3.44	47	2.08	***	***

STATION G 1/ 27/64 DATE 19/ 1/64 TIME 0445 K LATITUDE 28 32 S LONGITUDE 158 01 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH MET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

2651 20.0 23.9 00 2 11 * 1 * 1 8 00 2 06 1 1013.0 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	24.67	35.530	23.86	4.63	101	0.13	0.34	***
2	25	24.63	35.527	23.87	4.59	100	0.11	***	***
2	50	27.75	35.550	24.44	4.95	104	0.11	0.25	***
2	75	21.75	35.627	24.78	4.99	104	0.10	***	***
2	100	20.68	35.609	25.06	4.86	99	0.16	0.25	***
2	150	19.28	35.588	25.42	4.42	88	0.31	***	***
2	200	18.68	35.595	25.57	4.23	83	0.39	0.44	***
2	300	16.66	35.502	26.00	4.15	78	0.52	0.55	***
2	500	11.40	34.990	26.71	4.25	71	1.02	1.14	***
1	700	8.16	34.615	26.97	4.35	68	1.43	1.51	***
1	900	6.15	34.486	27.15	4.19	62	1.74	1.80	***
1	1100	4.73	34.481	27.32	3.91	56	1.94	2.01	***
1	1300	3.71	34.539	27.47	3.51	49	2.07	2.19	***
1	1500	3.08	34.591	27.57	3.41	46	2.12	2.32	***
1	2000	2.34	34.671	27.70	3.62	48	2.07	2.35	***
1	2500	1.94	34.717	27.77	3.96	52	2.03	1.80	***

STATION G 1/ 29/64 DATE 19/ 1/64 TIME 1530 K LATITUDE 28 30 S LONGITUDE 156 10 E

4663 21.9 26.1 04 1 11 8 1 8 00 0 09 1 1013.5 * * *
 SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGLES
 DEPTH MET DRY. DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	26.40	35.506	23.31	4.54	102	0.12	***	***
2	25	25.60	35.514	23.57	4.54	101	0.12	***	***
2	50	23.48	35.496	24.19	4.82	103	0.11	***	***
2	75	22.15	35.537	24.60	4.36	91	0.25	***	***
2	100	20.80	35.612	25.03	4.87	99	0.15	***	***
2	150	19.34	35.593	25.40	4.25	84	0.35	***	***
2	200	18.03	35.531	25.69	3.77	73	0.58	***	***
2	300	15.42	35.345	26.16	3.91	72	0.69	***	***
2	500	12.50	35.086	26.58	4.14	71	0.93	***	***
1	700	8.20	34.619	26.97	4.22	66	1.42	***	***
1	900	5.81	34.479	27.19	4.10	60	1.75	***	***
1	1100	4.66	34.483	27.33	3.85	55	1.94	***	***
1	1300	3.80	34.526	27.45	3.52	49	2.06	***	***
1	1500	3.18	34.577	27.55	3.36	46	2.16	***	***
1	2000	2.38	34.662	27.69	3.57	48	2.10	***	***
1	2500	1.94	34.720	27.77	3.96	52	1.98	***	***

STATION G 1/ 30/64 DATE 19/ 1/64 TIME 2250 K LATITUDE 28 32 S LONGITUDE 154 59 E

SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR, SP. HEIGHT TYPE AMT. VIS. DIR, AMT. DIR, AMT. PRESSURE CAST1 CAST2 CAST3

4389 22.8 25.6 03 3 11 * * * 8 02 2 06 1 1014.0 35 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P.	TOTAL P	NITRATE
2	0	25.72	35.487	23.51	4.56	101	0.13	***	***
2	24	25.55	35.482	23.56	4.56	101	0.12	***	***
2	48	22.75	35.552	24.44	4.85	102	0.12	***	***
2	72	21.63	35.560	24.77	4.50	93	0.19	***	***
2	96	20.80	35.588	25.01	3.86	79	0.39	***	***
2	144	19.65	35.604	25.33	3.90	78	0.45	***	***
2	191	18.56	35.577	25.59	3.91	76	0.51	***	***
2	287	15.90	35.425	26.12	4.06	75	0.61	***	***
2	479	10.45	***	***	4.33	***	1.08	***	***
1	544	9.51	34.763	26.87	4.21	68	1.25	***	***
1	710	7.71	34.557	26.99	4.23	65	1.48	***	***
1	877	6.10	34.475	27.15	4.21	62	1.70	***	***
1	1046	4.94	34.468	27.28	3.88	56	1.85	***	***
1	1217	4.23	34.497	27.38	3.48	49	1.95	***	***
1	1656	2.89	34.606	27.60	3.39	46	2.10	***	***
1	2116	2.20	34.688	27.73	3.81	51	2.04	***	***

STATION G 1/ 32/64 DATE 20/ 1/64 TIME 0530 K LATITUDE 28 35 S LONGITUDE 154 09 E

SONIC AIR TEMP. WIND DIR, SP. ANEM. HEIGHT CLOUD TYPE AMT. VIS. DIR. AMT. SEA SWELL DIR. AMT. ATMOS. PRESSURE WIRE ANGLES
 DEPTH MET DRY 25.0 33. 2 11 8 1 8 0 0 0 05 1 1013.5 5 * * *
 2158

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	24.69	35.485	23.82	4.56	100	0.13	***	***
1	25	24.30	35.484	23.94	4.62	100	0.13	***	***
1	50	21.23	35.514	24.84	4.36	90	0.35	***	***
1	75	19.44	35.564	25.36	3.93	78	0.48	***	***
1	100	18.07	35.519	25.67	3.61	74	0.58	***	***
1	150	16.43	35.409	25.98	3.93	74	0.65	***	***
1	200	15.14	35.335	26.22	4.03	73	0.69	***	***
1	300	13.03	35.113	26.49	4.08	71	0.91	***	***
1	500	9.84	34.775	26.82	4.32	70	1.17	***	***
1	700	7.27	34.532	27.03	4.33	66	1.55	***	***
1	900	5.54	34.476	27.22	4.13	60	1.77	***	***
1	1100	4.40	34.488	27.36	3.84	54	1.96	***	***
1	1300	3.63	34.538	27.48	3.53	49	2.06	***	***
1	1500	3.03	34.589	27.58	3.42	47	2.12	***	***

STATION G 1/ 35/64 DATE 20/ 1/64 TIME 2015 K LATITUDE 31 02 S LONGITUDE 153 30 E

SONIC AIR TEMP. WIND ANEM. CLOUD SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

1829 24.4 26.1 01 2 11 * * 8 01 2 03 1 1010.0 5 * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRA1E
1	0	24.41	35.541	23.95	4.78	104	0.10	***	***
1	25	24.17	35.550	24.03	4.79	104	0.08	***	***
1	50	21.90	35.592	24.71	5.10	106	0.09	***	***
1	75	21.07	35.618	24.96	5.07	104	0.09	***	***
1	100	20.38	35.602	25.14	4.97	101	0.16	***	***
1	150	19.12	35.586	25.46	4.77	94	0.24	***	***
1	200	18.01	35.560	25.72	4.32	84	0.42	***	***
1	300	15.05	35.382	26.27	4.43	81	0.61	***	***
1	500	10.54	34.910	26.81	4.43	73	1.08	***	***
1	700	7.62	34.967	27.01	4.42	68	1.50	***	***
1	900	5.76	34.486	27.20	4.21	62	1.81	***	***
1	1100	4.42	34.484	27.35	3.83	54	2.03	***	***
1	1300	3.48	34.536	27.49	3.56	49	2.12	***	***
1	1500	2.78	34.611	27.62	3.37	46	2.10	***	***

STATION G 1/ 37/64 DATE 21/ 1/64 TIME 0545 K LATITUDE 31 01 S LONGITUDE 155 06 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS, SEA SWELL ATMOS. WIRE ANGLES
 DEPTH NET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4389	24.4	25.6	32	2	11	6	5	7	02	2	04	1	1011.0	5	5	*
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE							
2	0	23.88	35.614	24.16	4.78	103	0.12	***	***							
2	25	23.85	35.618	24.17	4.78	103	0.09	***	***							
2	50	23.63	35.629	24.25	4.86	104	0.09	***	***							
2	75	21.02	35.614	24.98	5.13	105	0.14	***	***							
2	100	19.65	35.588	25.32	5.02	100	0.18	***	***							
2	150	18.48	35.576	25.61	4.43	86	0.36	***	***							
2	200	17.76	35.566	25.78	4.30	83	0.44	***	***							
2	300	16.09	35.448	26.09	4.29	80	0.56	***	***							
2	500	11.84	35.024	26.66	4.32	73	0.95	***	***							
1	693	8.92	34.684	26.90	4.40	70	1.45	***	***							
1	891	6.63	34.498	27.10	4.24	63	1.61	***	***							
1	1090	5.39	34.466	27.23	4.14	60	1.85	***	***							
1	1289	4.36	***	***	3.78	***	1.95	***	***							
1	1489	3.49	34.557	27.51	3.61	50	2.07	***	***							
1	1587	2.43	34.657	27.68	3.67	49	2.06	***	***							
1	2486	2.00	34.718	27.77	4.07	54	1.96	***	***							

STATION G 1/ 38/64 DATE 21/ 1/64 TIME 1600 K LATITUDE 31 01 S LONGITUDE 156 44 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH MET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4389 21,1 23.9 16 5 11 8 7 8 16 4 16 1 1013.9 5 5 *

CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	24.00	35.539	24.07	4.76	103	0.13	0.23	***
2	25	23.70	35.531	24.15	4.72	101	0.13	***	***
2	50	22.91	35.535	24.38	4.88	103	0.12	0.25	***
2	75	21.69	35.564	24.75	4.87	101	0.12	***	***
2	100	21.31	35.596	24.88	4.90	101	0.13	0.30	***
2	150	19.79	35.589	25.29	4.38	88	0.29	***	***
2	200	19.06	35.589	25.47	4.43	87	0.31	0.36	***
2	300	17.49	35.547	25.83	4.14	79	0.49	0.61	***
2	500	12.61	35.123	26.58	4.24	73	0.86	1.03	***
1	700	9.06	34.706	26.90	4.37	69	1.28	1.25	***
1	500	6.96	34.522	27.07	4.24	64	1.62	1.57	***
1	1100	5.40	34.483	27.24	4.07	59	1.83	1.67	***
1	1300	4.33	34.507	27.38	3.75	53	1.96	1.79	***
1	1500	3.44	34.559	27.51	3.49	48	2.08	2.04	***
1	2000	2.38	34.664	27.69	3.66	49	2.06	1.97	***

STATION G 1/ 40/64 DATE 22/ 1/64 TIME 0420 K LATITUDE 32 57 S LONGITUDE 156 44 E

SONIC AIR TEMP. WIND ANEM. CLOUD SEA VIS. SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4480 18.3 21.7 99 1 11 8 1 8 00 0 23 1 1018.0 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	22.94	35.214	24.13	4.88	103	0.10	***	***
2	25	23.00	35.295	24.18	4.81	102	0.12	***	***
2	50	22.22	35.487	24.55	4.91	103	0.11	***	***
2	75	20.78	35.567	25.00	5.06	103	0.10	***	***
2	100	20.19	35.567	25.16	4.14	83	0.38	***	***
2	150	17.90	35.550	25.74	4.54	88	0.35	***	***
2	200	16.75	35.500	25.97	4.61	87	0.39	***	***
2	300	15.05	35.423	26.31	4.83	88	0.47	***	***
2	500	12.24	35.133	26.66	4.61	79	0.80	***	***
1	679	9.13	34.707	26.89	4.48	71	1.21	***	***
1	875	7.01	34.518	27.06	4.31	65	1.52	***	***
1	1072	5.49	34.467	27.22	4.14	60	1.81	***	***
1	1270	4.38	34.488	27.36	3.82	54	1.88	***	***
1	1470	3.51	34.545	27.50	3.57	49	2.04	***	***
1	1570	2.44	34.649	27.68	3.61	48	2.05	***	***
1	2470	2.05	34.709	27.76	4.06	54	1.96	***	***

STATION G 1/ 42/64 DATE 22/ 1/64 TIME 1400 K LATITUDE 33 00 S LONGITUDE 155 10 E

SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGLES
 DEPTH DRY DIR. SP. HEIGHT TYPE AMT. VIS. SEA DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4572 18.9 23.6 06 2 11 8 2 8 10 2 17 1 1018.3 20 10 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	23.03	35.534	24.35	4.91	104	0.11	***	***
2	23	22.45	35.558	24.53	4.94	104	0.10	***	***
2	47	22.27	35.567	24.59	4.94	103	0.11	***	***
2	71	22.18	35.559	24.61	4.99	104	0.11	***	***
2	95	20.65	35.501	24.99	5.18	105	0.13	***	***
2	143	17.33	35.532	25.86	4.55	87	0.37	***	***
2	191	15.42	35.386	26.19	4.33	79	0.63	***	***
2	288	12.92	35.149	26.54	4.29	75	0.86	***	***
2	485	10.17	34.861	26.83	4.54	74	1.13	***	***
1	590	8.91	34.683	26.91	4.51	71	1.25	***	***
1	760	7.17	34.529	27.05	4.36	66	1.55	***	***
1	933	5.82	34.464	27.17	4.19	61	1.81	***	***
1	1108	4.72	34.478	27.32	4.00	57	1.88	***	***
1	1287	4.03	34.510	27.42	3.72	52	1.96	***	***
1	1744	2.71	34.619	27.63	3.56	48	2.08	***	***
1	2218	2.20	34.692	27.73	3.85	51	2.03	***	***

STATION G 1/ 43/64 DATE 22/ 1/64 TIME 2025 K LATITUDE 33 10 S LONGITUDE 153 57 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS, SEA SWELL. WIRE ANGLES
 DEPTH MET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 :CAST3

4535 20.6 22.8 05 3 11 6 2 8 05 2 19 1 1015.9 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	21.39	35.588	24.85	5.10	105	0.14	***	***
2	25	21.23	35.587	24.90	5.09	105	0.16	***	***
2	50	18.39	35.548	25.61	5.18	101	0.18	***	***
2	75	15.47	35.427	26.21	4.75	87	0.52	***	***
2	100	14.58	35.354	26.35	4.57	82	0.62	***	***
2	150	13.25	35.234	26.54	4.44	78	0.76	***	***
2	200	12.81	35.221	26.62	4.67	81	0.78	***	***
2	300	11.34	35.028	26.75	4.50	75	0.92	***	***
2	500	8.54	34.654	26.94	4.39	69	1.34	***	***
1	683	6.72	34.508	27.09	4.23	63	1.65	***	***
1	879	5.38	34.483	27.24	4.11	60	1.81	***	***
1	1074	4.26	34.484	27.37	3.87	54	1.95	***	***
1	1270	3.51	34.534	27.49	3.56	49	2.06	***	***
1	1467	3.02	34.584	27.57	3.41	46	2.09	***	***
1	1561	2.28	34.677	27.71	3.76	50	2.00	***	***
1	2459	1.92	34.724	27.78	4.07	54	1.94	***	***

STATION G 1/ 44/64 DATE 23/ 1/64 TIME 0240 K LATITUDE 33 03 S LONGITUDE 152 59 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH MET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

3017 22.2 22.0 03 3 11 * * * 8 02 2 09 1 1011.5 5 * * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	21.39	35.578	24.85	4.94	102	0.08	***	***
1	24	21.31	35.583	24.87	4.99	103	0.06	***	***
1	48	**	35.551	***	5.03	***	0.06	***	***
1	72	17.09	35.451	25.86	4.12	78	0.47	***	***
1	96	15.42	35.396	26.20	4.45	82	0.56	***	***
1	144	13.88	35.332	26.49	4.73	84	0.60	***	***
1	192	13.14	35.262	26.59	4.72	82	0.69	***	***
1	287	11.30	35.009	26.75	4.49	75	0.94	***	***
1	479	8.53	34.657	26.94	4.49	70	1.33	***	***
1	671	6.70	34.501	27.09	4.27	64	1.64	***	***
1	863	5.26	34.466	27.24	4.05	58	1.85	***	***
1	1055	4.17	34.494	27.39	3.70	52	1.99	***	***
1	1246	3.49	34.544	27.50	3.46	48	2.11	***	***
1	1438	2.94	34.590	27.59	3.39	46	2.13	***	***

STATION G 1/ 45/64 DATE 23/ 1/64 TIME 0900 K LONGITUDE 153 28 E
 LATITUDE 34 03 S

4389 22.6 23.9 00 4 11 8 3 7 02 3 04 1 1012.9 5 5 *
 SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	22.38	35.356	24.40	4.99	104	0.09	0.30	0.0
2	25	21.87	35.496	24.65	5.02	104	0.09	***	0.0
2	50	17.30	35.423	25.78	3.65	70	0.66	0.81	3.5
2	75	15.56	35.350	26.13	3.93	72	0.69	***	4.7
2	100	13.58	35.193	26.44	4.16	73	0.81	0.96	5.3
2	150	12.40	35.096	26.60	4.27	73	0.86	***	6.5
2	200	11.08	34.928	26.72	4.27	71	1.03	1.15	10.7
2	300	9.45	34.747	26.87	4.33	69	1.17	1.35	11.4
2	500	7.40	34.543	27.02	4.35	66	1.48	1.62	18.8
2	700	6.02	34.470	27.15	4.19	62	1.69	1.86	23.9
2	900	4.80	34.475	27.30	3.98	57	1.89	1.99	22.2
2	1100	4.00	34.505	27.41	3.70	52	2.02	2.13	27.2
1	1300	3.29	34.556	27.53	3.41	47	2.06	2.27	28.1
1	1500	2.77	34.603	27.61	3.46	47	2.04	2.30	29.6
1	2000	2.20	34.680	27.72	3.82	51	1.99	2.15	27.0
1	2500	1.82	34.720	27.78	***	***	1.86	2.12	25.7
1	3000	1.50	34.721	27.81	4.22	55	1.74	2.00	25.1
1	3500	1.18	34.716	27.83	4.37	57	1.96	2.13	27.3
1	4000	***	34.717	***	4.39	***	1.91	2.11	26.3
1	4300	1.15	34.715	27.83	4.42	57	1.93	2.14	29.8

STATION G 1/ 46/64 DATE 23/ 1/64 TIME 1635 K LATITUDE 34 50 S LONGITUDE 152 50 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 WET DRY DIR. SP. DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4572 23.9 26.4 18 2 11 * 1 8 00 1 02 1 1012.3 7 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN X SAT.	INORG. P	TOTAL P	NITRATE
2	0	21.98	35.570	24.68	***	***	***	***	***
2	25	21.86	35.575	24.71	***	***	***	***	***
2	50	21.84	35.576	24.72	***	***	***	***	***
2	75	21.69	35.578	24.76	***	***	***	***	***
2	100	19.81	35.585	25.28	***	***	***	***	***
2	150	18.99	35.580	25.49	***	***	***	***	***
2	200	18.39	35.578	25.64	***	***	***	***	***
2	300	16.00	35.460	26.12	***	***	***	***	***
2	500	11.40	35.039	26.75	***	***	***	***	***
1	654	8.59	34.650	26.93	***	***	***	***	***
1	841	6.78	34.510	27.08	***	***	***	***	***
1	1029	5.34	34.473	27.24	***	***	***	***	***
1	1218	4.27	34.499	27.38	***	***	***	***	***
1	1408	3.50	34.551	27.50	***	***	***	***	***
1	1890	2.43	34.659	27.68	***	***	***	***	***
1	2373	2.01	34.719	27.77	***	***	***	***	***

STATION G 1/ 47/64 DATE 24/ 1/64 TIME 2300 K LATITUDE 34 03 S LONGITUDE 151 55 E

SONIC AIR TEMP. WIND ANEM. CLOUD SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

1920 22.2 23.1 14 1 11 0 8 6 00 0 18 1 1012.5 5 * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRAIE
1	0	22.28	35.971	24.59	***	***	***	***	***
1	25	22.02	35.565	24.66	***	***	***	***	***
1	50	18.79	35.542	25.51	***	***	***	***	***
1	75	16.72	35.469	25.96	***	***	***	***	***
1	100	15.46	35.400	26.20	***	***	***	***	***
1	150	13.65	35.240	26.46	***	***	***	***	***
1	200	12.41	35.117	26.62	***	***	***	***	***
1	300	10.30	34.875	26.82	***	***	***	***	***
1	500	8.03	34.605	26.98	***	***	***	***	***
1	700	6.38	34.484	27.12	***	***	***	***	***
1	900	5.09	34.470	27.27	***	***	***	***	***
1	1100	4.12	34.505	27.40	***	***	***	***	***
1	1300	3.36	34.560	27.52	***	***	***	***	***
1	1500	2.87	34.602	27.60	***	***	***	***	***

STATION 6 1/ 50/64 DATE 29/ 1/64 TIME 0045 K LATITUDE 35 17 S LONGITUDE 151 17 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

1920 18.3 21.4 08 1 11 8 2 8 00 0 16 1 1018.0 15 * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	22.18	35.580	24.63	4.98	104	0.07	***	***
1	23	22.09	35.577	24.65	5.00	104	0.08	***	***
1	44	22.03	35.574	24.66	5.01	104	0.07	***	***
1	65	20.88	35.570	24.98	4.89	100	0.15	***	***
1	86	19.94	35.584	25.24	4.52	91	0.26	***	***
1	128	19.04	35.578	25.47	4.75	94	0.28	***	***
1	170	18.10	35.525	25.67	4.51	87	0.38	***	***
1	248	14.44	35.326	26.36	4.39	79	0.68	***	***
1	400	11.11	34.950	26.74	4.31	72	1.06	***	***
1	540	8.99	34.697	26.90	4.51	71	1.26	***	***
1	680	7.62	34.568	27.01	4.34	67	1.54	***	***
1	825	6.46	34.488	27.11	4.27	64	1.69	***	***
1	970	5.33	34.465	27.23	4.06	59	1.83	***	***
1	1135	4.34	34.484	27.36	3.94	56	1.93	***	***

STATION G 1/ 51/64 DATE 29/ 1/64 TIME 0650 K LATITUDE 35 33 S LONGITUDE 152 12 E

SONIC AIR TEMP. WIND DIR, SP. WIND ANEM. CLOUD TYPE AMT. VIS. SEA DIR, AMT. SWELL DIR, AMT. ATMOS. PRESSURE WIRE ANGLES
 DEPTH WET DRY 22.8 03 1 11 8 1 8 0 0 0 4 1 1018.5 5 5 *

CASE	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRAIE
2	0	22.22	35.564	24.60	4.92	103	0.11	***	***
2	25	22.22	35.574	24.61	4.95	104	0.11	***	***
2	50	22.16	35.572	24.63	4.95	103	0.10	***	***
2	75	21.25	35.559	24.87	4.86	100	0.15	***	***
2	100	20.53	35.575	25.08	4.69	95	0.23	***	***
2	150	19.34	35.580	25.39	4.57	91	0.32	***	***
2	200	19.07	35.578	25.46	4.78	94	0.27	***	***
2	300	17.37	35.537	25.86	4.39	84	0.47	***	***
2	500	13.05	35.226	26.58	4.57	80	0.74	***	***
1	689	9.53	34.769	26.87	4.45	71	1.18	***	***
1	887	7.03	34.541	27.07	4.33	65	1.59	***	***
1	1085	5.54	34.469	27.21	4.10	60	1.74	***	***
1	1284	4.25	34.498	27.38	3.76	53	1.97	***	***
1	1484	3.50	34.543	27.49	3.59	50	2.05	***	***
1	1983	2.44	34.651	27.68	3.64	49	2.07	***	***
1	2482	2.03	34.715	27.76	4.06	54	1.97	***	***

STATION G 1/ 52/64 DATE 29/ 1/64 TIME 1240 K LATITUDE 35 35 S LONGITUDE 153 05 E

SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR, SP. HEIGHT TYPE AMT. VIS, SEA DIR. AMT. PRESSURE CAST1 CAST2 CAST3

3475 18.3 21.7 07 2 11 * 1 8 08 1 07 3 1017.9 22 10 *

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN X SAT,	INORG. P	TOTAL P	NITRATE
2	0	22.39	35.583	24.57	4.98	104	0.10	***	***
2	23	22.13	35.583	24.64	4.99	104	0.08	***	***
2	45	22.04	35.572	24.66	5.02	105	0.08	***	***
2	67	21.38	35.562	24.84	4.92	101	0.09	***	***
2	89	20.12	35.579	25.19	4.60	93	0.25	***	***
2	134	19.13	35.576	25.45	4.75	94	0.26	***	***
2	178	18.44	35.578	25.62	4.39	86	0.41	***	***
2	268	15.84	35.443	26.14	4.46	83	0.54	***	***
2	446	11.48	35.052	26.75	4.63	78	0.88	***	***
1	610	8.60	34.658	26.93	4.51	71	1.32	***	***
1	760	7.06	34.523	27.06	4.36	66	1.55	***	***
1	910	5.69	34.465	27.19	4.21	61	1.75	***	***
1	1060	4.76	34.472	27.31	3.99	57	1.85	***	***
1	1210	4.08	34.504	27.40	3.80	53	1.96	***	***
1	1580	2.89	34.594	27.59	3.52	48	2.09	***	***
1	1955	2.30	34.669	27.70	3.75	50	1.99	***	***

STATION G 1/ 53/64 DATE 29/ 1/64 TIME 2130 K LATITUDE 35 10 S LONGITUDE 154 18 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4572 19.4 22.8 06 3 11 8 3 8 07 3 08 1 1017.0 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	22.68	35.517	24.44	5.01	106	0.07	***	***
2	25	22.36	35.554	24.56	5.07	106	0.05	***	***
2	50	18.84	35.574	25.52	4.61	91	0.27	***	***
2	75	17.56	35.539	25.81	4.32	83	0.40	***	***
2	100	16.66	35.485	25.98	4.42	83	0.48	***	***
2	150	14.87	35.385	26.32	4.56	83	0.58	***	***
2	200	13.07	35.186	26.54	4.41	77	0.80	***	***
2	300	11.07	34.951	26.74	4.37	73	1.04	***	***
2	500	8.05	34.604	26.98	4.37	68	1.42	***	***
1	700	6.33	34.480	27.12	4.27	63	1.67	***	***
1	900	5.01	34.464	27.27	4.03	58	1.90	***	***
1	1100	3.93	34.510	27.43	3.72	52	1.99	***	***
1	1300	3.41	34.549	27.51	3.51	48	2.09	***	***
1	1500	2.92	34.590	27.59	3.50	48	2.18	***	***
1	2000	2.18	34.676	27.72	3.87	52	2.04	***	***
1	2500	1.88	34.718	27.78	4.15	55	1.98	***	***

STATION G 1/ 55/64 DATE 30/ 1/64 TIME 1000 K LATITUDE 35 14 S LONGITUDE 156 32 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WFT DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

*** 20.0 23.3 07 4 11 8 6 8 08 2 08 1 1018.9 5 10 *

CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN X SAT.	INORG. P	TOTAL P	NITRATE
2	0	23.74	35.552	24.16	4.78	103	0.12	***	***
2	25	23.67	35.553	24.18	4.77	102	0.12	***	***
2	50	21.47	35.556	24.81	4.95	102	0.12	***	***
2	75	20.22	35.590	25.17	4.57	92	0.25	***	***
2	100	19.54	35.582	25.35	4.53	90	0.29	***	***
2	150	18.28	35.586	25.67	4.34	84	0.41	***	***
2	200	16.96	35.487	25.92	4.09	77	0.56	***	***
2	300	14.40	35.297	26.35	4.21	76	0.72	***	***
2	500	9.70	34.788	26.86	4.43	71	1.20	***	***
1	682	6.15	34.610	26.97	4.34	67	1.41	***	***
1	877	6.80	34.513	27.08	4.25	64	1.62	***	***
1	1072	5.16	34.473	27.26	4.04	58	1.89	***	***
1	1268	4.17	34.505	27.40	3.74	52	1.99	***	***
1	1463	3.37	34.560	27.52	3.54	49	2.09	***	***
1	1950	2.44	34.657	27.68	3.66	49	2.08	***	***
1	2438	2.04	34.714	27.76	4.07	54	2.03	***	***

STATION G 1/ 57/64 DATE 30/ 1/64 TIME 2035 K LATITUDE 35 50 S LONGITUDE 158 29 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3
 *** 20.0 22.8 06 3 11 4 2 8 06 2 07 1 1019.0 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	21.68	35.532	24.73	5.00	104	0.08	0.39	***
2	25	19.79	35.612	25.30	5.26	105	0.06	***	***
2	50	18.88	35.582	25.51	5.09	100	0.11	0.38	***
2	75	17.75	35.535	25.76	4.59	88	0.27	***	***
2	100	16.80	35.500	25.96	4.57	86	0.41	0.58	***
2	150	15.30	35.384	26.22	4.36	80	0.59	***	***
2	200	14.22	35.301	26.39	4.33	77	0.68	0.89	***
2	300	12.70	35.171	26.60	4.47	77	0.79	1.00	***
2	500	9.63	34.797	26.88	4.65	75	1.10	1.32	***
1	700	8.10	34.605	26.97	4.41	68	1.38	1.56	***
1	500	6.31	34.486	27.13	4.22	63	1.69	1.79	***
1	1100	4.96	34.470	27.28	4.00	57	1.71	2.05	***
1	1300	3.91	34.511	27.43	3.65	51	1.94	2.16	***
1	1500	3.21	34.570	27.54	3.51	48	2.06	2.20	***
1	2000	2.36	34.667	27.70	3.67	49	1.97	2.18	***
1	2500	1.93	34.725	27.78	4.10	54	1.95	2.15	***

STATION G 1/ 59/64 DATE 31/ 1/64 TIME 0730 K LATITUDE 36 30 S LONGITUDE 158 01 E

SONIC AIR TEMP. WIND ANEM. CLOUD SWELL' ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. SEA DIR. AMT. PRESSURE CAST1 CAST2 CAST3

*** 19.4 22.8 09 2 11 * 1 8 00 1 06 1 1018.0 5 5 * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	22.15	35.515	24.59	5.00	104	0.09	***	***
2	25	20.76	35.616	25.05	5.17	105	0.08	***	***
2	50	19.24	35.579	25.42	5.20	103	0.09	***	***
2	75	17.58	35.532	25.80	4.27	82	0.47	***	***
2	100	16.36	35.465	26.04	4.45	83	0.51	***	***
2	150	14.45	35.300	26.34	4.33	78	0.72	***	***
2	200	14.01	35.272	26.41	4.36	78	0.74	***	***
2	300	12.74	35.200	26.62	4.67	81	0.75	***	***
2	500	9.62	34.781	26.86	4.61	74	1.17	***	***
1	700	7.60	34.556	27.00	4.42	68	1.46	***	***
1	900	5.97	34.474	27.16	4.20	62	1.73	***	***
1	1100	4.75	34.474	27.31	3.97	57	1.92	***	***
1	1300	3.82	34.506	27.43	3.75	52	2.03	***	***
1	1500	3.12	34.570	27.55	3.58	49	2.15	***	***
1	2000	2.31	34.677	27.71	3.84	51	2.05	***	***
1	2500	1.89	34.732	27.79	4.17	55	1.95	***	***

STATION DATE TIME LATITUDE LONGITUDE
 G 1/ 61/64 31/ 1/64 1900 K 36 32 S 155 52 E

SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. SEA DIR. AMT. PRESSURE CAST1 CAST2 CAST3
 4023 20.0 22.2 04 3 11 8 3 8 04 2 04 1 1014.2 10 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRAIE
2	0	22.79	35.556	24.44	4.97	105	0.10	0.28	***
2	25	22.15	35.539	24.61	4.97	104	0.10	***	***
2	50	20.79	35.589	25.02	4.97	101	0.09	0.30	***
2	75	19.77	35.593	25.29	4.48	90	0.26	***	***
2	100	18.53	35.551	25.58	4.30	84	0.39	0.55	***
2	150	16.60	35.488	26.00	4.49	84	0.46	***	***
2	200	15.55	35.436	26.20	4.65	86	0.46	0.60	***
2	300	13.63	35.249	26.48	4.36	77	0.71	0.87	***
2	500	10.72	34.941	26.80	4.61	76	0.95	1.09	***
1	647	8.74	34.671	26.92	4.44	70	1.29	1.40	***
1	832	7.10	34.553	27.07	4.35	66	1.52	1.62	***
1	1019	5.79	34.473	27.18	4.17	61	1.70	1.84	***
1	1207	4.59	34.480	27.33	3.92	56	1.86	2.05	***
1	1396	3.75	34.528	27.46	3.72	52	2.03	2.19	***
1	1872	2.56	34.638	27.66	3.62	49	2.03	2.28	***
1	2363	2.14	34.712	27.75	4.01	53	1.95	2.10	***

STATION G 1/ 63/64 DATE 1/ 2/64 TIME 0430 K LATITUDE 36 47 S LONGITUDE 153 54 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4297 20.6 22.8 02 5 11 8 4 7 02 3 00 1 1012.0 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN X SAT.	INORG. P	TOTAL P	NITRATE
2	0	21.37	35.382	24.70	5.09	105	0.10	***	***
2	25	21.16	35.588	24.92	5.12	105	0.10	***	***
2	50	20.51	35.624	25.12	5.12	104	0.10	***	***
2	75	18.29	35.563	25.65	4.90	95	0.28	***	***
2	100	17.07	35.525	25.92	4.65	88	0.42	***	***
2	150	15.55	35.414	26.19	4.42	81	0.61	***	***
2	200	14.56	35.308	26.32	4.24	76	0.71	***	***
2	300	12.92	35.239	26.61	4.77	83	0.73	***	***
2	500	9.79	34.813	26.86	4.65	75	1.11	***	***
1	700	7.60	34.563	27.01	4.42	68	1.48	***	***
1	900	5.95	34.475	27.17	4.23	62	1.74	***	***
1	1100	4.74	34.477	27.31	3.95	56	1.94	***	***
1	1300	3.85	34.514	27.44	3.71	52	2.08	***	***
1	1500	3.21	34.568	27.54	3.57	49	2.10	***	***
1	2000	2.39	34.663	27.69	3.78	51	2.08	***	***
1	2500	1.99	34.721	27.77	4.12	55	1.99	***	***

STATION 6 1/ 64/64 DATE 1/ 2/64 TIME 1034 K LATITUDE 36 55 S LONGITUDE 152 51 E

SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3
 *** 21.7 23.3 00 3 11 4 1 8 00 3 01 1 1013.2 5 5 *

CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRAIE
2	0	21.80	35.537	24.70	5.05	105	0.08	***	***
2	25	20.70	35.567	25.03	5.25	107	0.07	***	***
2	50	18.63	35.533	25.54	4.55	89	0.34	***	***
2	75	17.16	35.463	25.85	4.36	83	0.42	***	***
2	100	15.47	35.376	26.17	4.26	78	0.64	***	***
2	150	13.27	35.217	26.52	4.36	76	0.78	***	***
2	200	11.68	35.058	26.71	4.56	77	0.92	***	***
2	300	9.55	34.783	26.88	4.64	75	1.19	***	***
2	500	7.50	34.563	27.02	4.38	67	1.50	***	***
1	700	6.14	34.479	27.15	4.30	63	1.67	***	***
1	900	4.78	34.478	27.31	4.01	57	1.88	***	***
1	1100	3.81	34.520	27.45	3.76	52	2.03	***	***
1	1300	3.21	34.567	27.54	3.54	48	2.00	***	***
1	1500	2.73	34.614	27.62	3.49	47	2.01	***	***
1	2000	2.19	34.689	27.73	3.91	52	2.12	***	***
1	2500	1.84	34.726	27.79	4.16	55	2.11	***	***

STATION G 1/ 65/64 DATE 1/ 2/64 TIME 1712 K LATITUDE 36 46 S LONGITUDE 151 44 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4572 20.6 22.8 24 3 11 8 7 7 24 1 01 1 1013.0 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	20.61	35.612	25.08	5.19	105	0.13	***	***
2	25	19.39	35.607	25.40	5.33	106	0.13	***	***
2	50	18.79	35.611	25.56	5.11	100	0.15	***	***
2	75	17.69	35.530	25.77	4.76	91	0.29	***	***
2	100	16.37	35.458	26.03	4.72	88	0.42	***	***
2	150	13.94	35.280	26.43	4.39	78	0.75	***	***
2	200	12.83	35.190	26.59	4.54	79	0.81	***	***
2	300	11.24	35.001	26.75	4.88	82	0.98	***	***
2	500	8.36	34.639	26.96	4.44	69	1.40	***	***
1	700	6.79	34.510	27.08	4.31	65	1.63	***	***
1	900	5.41	34.464	27.22	4.16	60	1.85	***	***
1	1100	4.22	34.492	27.38	3.81	54	2.00	***	***
1	1300	3.38	34.540	27.50	3.60	49	2.08	***	***
1	1500	2.92	34.594	27.59	3.46	47	2.10	***	***
1	2000	2.25	34.680	27.72	3.86	51	2.03	***	***
1	2500	1.91	34.726	27.78	4.13	55	1.96	***	***

STATION G 1/ 66/64 DATE 2/ 2/64 TIME 0053 K LATITUDE 36 35 S LONGITUDE 150 28 E

SONIC AIR TEMP. WIND DIR, SP. ANEM. HEIGHT CLOUD TYPE AMT. VIS. SEA DIR. AMT. SWELL DIR. AMT. ATMOS. PRESSURE WIRE ANGLES
 DEPTH MET DRY DIR, SP. HEIGHT TYPE AMT. VIS. SEA DIR. AMT. SWELL DIR. AMT. ATMOS. PRESSURE CAST1 CAST2 CAST3

2012 18.3 20.0 19 1 11 8 8 7 19 1 20 4 1015.0 10 * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	21.92	35.585	24.70	4.96	103	0.08	***	***
1	25	21.94	35.586	24.70	4.99	104	0.13	***	***
1	49	21.15	35.577	24.91	4.98	102	0.15	***	***
1	74	17.51	35.506	25.80	4.43	85	0.38	***	***
1	99	14.07	35.403	26.06	4.57	85	0.48	***	***
1	148	14.52	35.326	26.35	4.35	78	0.60	***	***
1	197	13.23	35.239	26.55	4.56	80	0.71	***	***
1	296	11.59	35.083	26.75	4.88	82	0.80	***	***
1	492	8.69	34.665	26.93	4.65	73	1.25	***	***
1	689	6.95	34.514	27.06	4.33	65	1.52	***	***
1	886	5.56	34.468	27.21	4.10	60	1.73	***	***
1	1084	4.36	34.489	27.36	3.80	54	1.93	***	***
1	1283	3.47	34.553	27.51	3.54	49	2.04	***	***
1	1482	2.88	34.598	27.60	3.55	48	2.13	***	***

STATION G 1/ 69/64 DATE 2/ 2/64 TIME 1818 K LATITUDE 38 29 S LONGITUDE 149 51 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH MET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

1829 17.2 19.4 10 1 11 7 8 8 16 1 20 1 1014.4 5 * *

CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN X SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.95	35.624	25.53	5.34	105	0.13	***	***
1	25	18.74	35.619	25.58	5.34	105	0.13	***	***
1	50	17.82	35.589	25.79	5.40	104	0.16	***	***
1	75	17.21	35.556	25.91	5.31	101	0.18	***	***
1	100	17.06	35.550	25.94	5.28	100	0.20	***	***
1	150	14.60	35.387	26.38	4.86	88	0.52	***	***
1	200	13.02	35.232	26.59	4.63	81	0.73	***	***
1	300	11.03	34.978	26.77	4.57	76	0.98	***	***
1	500	8.01	34.602	26.98	4.42	68	1.42	***	***
1	700	6.62	34.497	27.10	4.32	65	1.65	***	***
1	900	5.24	34.466	27.25	4.09	59	1.88	***	***
1	1100	4.25	34.482	27.37	3.91	55	2.00	***	***
1	1300	3.49	34.529	27.48	3.62	50	2.17	***	***
1	1500	2.92	34.588	27.59	3.56	48	2.08	***	***

STATION G 1/ 70/64 DATE 3/ 2/64 TIME 0100 K LONGITUDE 151 03 E
 LATITUDE 38 30 S

SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGLES
 WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4389 22.2 23.3 02 1 11 8 5 7 00 0 20 1 1014.0 10 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	19.66	35.585	25.32	5.22	104	0.12	***	***
2	25	17.74	35.597	25.81	5.38	103	0.16	***	***
2	50	17.46	35.579	25.86	5.28	101	0.17	***	***
2	75	17.05	35.542	25.94	5.31	101	0.17	***	***
2	100	16.04	35.462	26.11	5.05	94	0.29	***	***
2	150	14.48	35.372	26.39	4.75	85	0.58	***	***
2	200	13.81	35.348	26.51	4.99	88	0.57	***	***
2	300	12.38	35.202	26.69	5.05	87	0.69	***	***
2	500	9.74	34.826	26.88	5.06	82	1.05	***	***
1	681	8.09	34.598	26.97	4.45	69	1.39	***	***
1	877	6.45	34.486	27.11	4.29	64	1.68	***	***
1	1073	5.17	34.466	27.25	4.11	59	1.86	***	***
1	1269	3.98	34.479	27.40	3.92	55	1.96	***	***
1	1466	3.22	34.548	27.53	3.65	50	2.04	***	***
1	1960	2.38	34.663	27.69	3.79	51	2.01	***	***
1	2458	2.03	34.719	27.77	4.14	55	1.91	***	***

STATION G 1/ 71/64 DATE 3/ 2/64 TIME 0845 K LATITUDE 38 33 S LONGITUDE 152 20 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH MET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4389 20.6 22.2 02 2 11 7 04 2 03 1 1017.5 15 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	19.78	35.643	25.33	5.21	104	0.16	***	***
2	25	17.81	35.656	25.84	5.32	102	0.16	***	***
2	50	17.60	35.655	25.89	5.22	100	0.19	***	***
2	75	17.58	35.651	25.89	5.19	100	0.21	***	***
2	100	17.32	35.625	25.93	5.00	95	0.29	***	***
2	150	16.78	35.567	26.02	4.78	90	0.41	***	***
2	200	16.13	35.508	26.13	4.71	88	0.50	***	***
2	300	14.49	35.433	26.44	4.96	89	0.52	***	***
2	500	12.11	35.173	26.72	4.88	83	0.76	***	***
1	656	10.56	34.967	26.85	4.88	80	0.93	***	***
1	844	8.48	34.691	26.98	4.60	72	1.29	***	***
1	1031	6.59	34.500	27.10	4.24	63	1.70	***	***
1	1219	5.31	34.464	27.24	4.02	58	1.83	***	***
1	1406	4.21	34.493	27.38	3.78	53	2.04	***	***
1	1875	2.73	34.611	27.62	3.58	48	2.09	***	***
1	2344	2.15	34.707	27.75	3.90	52	2.03	***	***

STATION DATE TIME LATITUDE LONGITUDE

G 1/ 72/64 3/ 2/64 1750 K 38 27 S 153 48 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4389 20.e 22.8 03 4 11 4 3 8 03 3 35 5 1017.0 10 5 *

CST DEPTH TEMP. SALINITY SIGMA-T OXYGEN OXYGEN % SAT. INORG. P TOTAL P NITRATE

2	0	19.74	35.623	25.32	5.22	104	0.11	0.30	***
2	25	18.86	35.602	25.54	5.28	104	0.11	***	***
2	50	17.56	35.595	25.85	5.32	102	0.13	0.30	***
2	75	17.16	35.569	25.93	5.18	98	0.17	***	***
2	100	16.28	35.488	26.08	4.80	90	0.37	0.49	***
2	150	14.51	35.375	26.39	4.59	83	0.52	***	***
2	200	13.73	35.347	26.53	4.97	88	0.54	0.65	***
2	300	12.22	35.176	26.70	4.79	82	0.72	0.87	***
2	500	9.80	34.818	26.86	4.80	78	1.04	1.19	***
1	700	8.16	34.644	26.99	4.73	73	1.29	1.44	***
1	900	6.57	34.522	27.12	4.22	63	1.60	1.75	***
1	1100	5.24	34.463	27.24	4.05	58	1.85	1.95	***
1	1300	4.12	34.490	27.39	3.71	52	1.95	2.10	***
1	1500	3.36	34.547	27.51	3.53	48	2.07	2.19	***
1	2000	2.43	34.660	27.69	3.76	50	2.01	2.17	***
1	2500	2.01	34.723	27.77	4.04	54	1.95	2.04	***

STATION G 1/ 74/64 DATE 4/ 2/64 TIME 0515 K LATITUDE 40 06 S LONGITUDE 153 48 E

SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4480 19.4 20.0 02 4 11 1 1 7 02 2 04 1 1016.0 10 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	18.93	35.540	25.47	5.04	99	0.18	0.13	***
2	25	17.61	35.573	25.82	5.31	102	0.19	***	***
2	50	16.87	35.534	25.97	4.99	94	0.30	0.20	***
2	75	15.54	35.445	26.21	4.63	85	0.47	***	***
2	100	14.37	35.379	26.42	4.86	87	0.55	0.45	***
2	150	13.22	35.296	26.59	4.92	86	0.64	***	***
2	200	12.30	35.193	26.70	5.09	87	0.69	0.64	***
2	300	11.17	35.065	26.81	5.47	91	0.72	0.69	***
2	500	9.13	34.710	26.89	5.39	86	1.07	0.99	***
1	700	8.04	34.556	26.94	5.55	86	1.34	1.27	***
1	900	6.44	34.492	27.12	4.34	65	1.64	1.62	***
1	1100	5.10	34.462	27.26	4.04	58	1.87	1.85	***
1	1300	3.83	34.475	27.41	3.88	54	2.02	1.93	***
1	1500	3.22	34.561	27.54	3.53	48	2.12	2.10	***
1	2000	2.36	34.667	27.70	3.75	50	2.07	1.99	***
1	2500	1.98	34.736	27.78	4.06	54	1.98	1.97	***

STATION G 1/ 75/64 DATE 4/ 2/64 TIME 1105 K LATITUDE 40 15 S LONGITUDE 152 45 E

SONIC AIR TEMP. WIND ANEM. CLOUD SWELL ATMOS. WIRE ANGLES
 DEPTH MET DRY DIR. SP. HEIGHT TYPE AMT. VIS, DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4480 19.4 20.6 01 3 11 2 2 2 8 02 2 00 1 1015.0 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	18.64	35.523	25.53	5.35	105	0.11	***	***
2	25	17.76	35.474	25.71	5.45	105	0.16	***	***
2	50	15.94	35.475	26.14	5.61	104	0.17	***	***
2	75	15.31	35.438	26.26	5.09	93	0.36	***	***
2	100	13.60	35.272	26.50	5.26	93	0.50	***	***
2	150	12.70	35.230	26.65	4.87	84	0.73	***	***
2	200	12.02	35.149	26.72	4.87	83	0.78	***	***
2	300	11.05	35.024	26.80	5.32	89	0.76	***	***
2	500	8.62	34.618	26.90	5.71	90	1.06	***	***
1	700	7.71	34.535	26.97	4.76	73	1.42	***	***
1	900	6.10	34.447	27.12	4.40	65	1.70	***	***
1	1100	4.60	34.424	27.29	4.22	60	1.88	***	***
1	1300	3.93	34.506	27.42	3.72	52	2.07	***	***
1	1500	3.13	34.544	27.53	3.69	50	2.08	***	***
1	2000	2.38	34.670	27.70	3.77	50	2.01	***	***
1	2500	2.00	34.728	27.78	4.12	55	1.92	***	***

STATION 6 1/ 76/64 DATE 4/ 2/64 TIME 1745 K LATITUDE 40 11 S LONGITUDE 151 29 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4389 20.0 20.6 36 3 11 6 8 7 36 2 02 1 1013.5 5 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG. P	TOTAL P	NITRATE
2	0	19.21	35.650	25.48	5.26	104	0.16	***	***
2	25	18.99	35.650	25.54	5.28	104	0.15	***	***
2	50	18.14	35.629	25.74	5.18	100	0.19	***	***
2	75	17.62	35.602	25.84	5.16	99	0.19	***	***
2	100	16.79	35.520	25.98	4.64	88	0.42	***	***
2	150	15.24	35.432	26.27	4.76	87	0.52	***	***
2	200	13.78	35.331	26.51	4.92	87	0.61	***	***
2	300	12.29	35.188	26.70	4.98	85	0.73	***	***
2	500	9.74	34.810	26.87	4.94	80	1.07	***	***
1	700	8.29	34.625	26.96	4.58	71	1.34	***	***
1	900	6.36	34.480	27.12	4.27	63	1.70	***	***
1	1100	5.04	34.461	27.26	4.06	58	1.90	***	***
1	1300	4.10	34.496	27.40	3.75	53	2.00	***	***
1	1500	3.35	34.545	27.51	3.60	49	2.13	***	***
1	2000	2.42	34.661	27.69	3.76	50	2.05	***	***
1	2500	2.01	34.720	27.77	4.09	54	2.00	***	***

STATION G 1/ 77/64 DATE 5/ 2/64 TIME 0026 K LATITUDE 40 12 S LONGITUDE 150 16 E

SONIC AIR TEMP. WIND ANEM. CLOUD SEA SWELL. ATMOS. WIRE ANGLES
 DEPTH MET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

4023 20.0 20.6 34 3 11 7 8 7 35 2 02 1 1013.5 10 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	19.30	35.627	25.44	5.22	103	0.18	***	***
2	25	19.63	35.628	25.61	5.28	103	0.18	***	***
2	50	17.46	35.576	25.86	5.05	97	0.27	***	***
2	75	16.97	35.535	25.95	4.88	92	0.36	***	***
2	100	15.60	35.450	26.20	4.73	87	0.48	***	***
2	150	14.19	35.380	26.46	4.90	88	0.57	***	***
2	200	13.99	35.417	26.53	5.31	95	0.48	***	***
2	300	12.69	35.245	26.66	5.56	96	0.66	***	***
2	500	10.59	34.941	26.82	4.98	82	0.92	***	***
1	671	8.83	34.677	26.91	4.82	76	1.24	***	***
1	864	7.26	34.535	27.04	4.32	66	1.50	***	***
1	1060	5.56	34.457	27.20	4.16	61	1.79	***	***
1	1251	4.37	34.486	27.36	3.81	54	1.96	***	***
1	1446	3.60	34.522	27.47	3.67	51	2.03	***	***
1	1933	2.50	34.650	27.67	3.71	50	2.01	***	***
1	2423	2.10	34.715	27.76	4.02	53	1.96	***	***

STATION G 1/ 78/64 DATE 5/ 2/64 TIME 0645 K LATITUDE 40 19 S LONGITUDE 149 09 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

2195 17.8 19.4 17. 4 11 4 5 7 17 2 02 1 1016.5 5 * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.90	35.633	25.55	5.32	105	0.12	***	***
1	25	18.69	35.630	25.60	5.30	104	0.15	***	***
1	50	18.15	35.599	25.71	5.11	99	0.17	***	***
1	75	15.83	35.456	26.15	4.76	88	0.41	***	***
1	100	15.20	35.420	26.27	4.74	87	0.49	***	***
1	150	13.72	35.268	26.47	4.45	79	0.74	***	***
1	200	12.97	35.215	26.58	4.59	80	0.76	***	***
1	300	11.48	35.062	26.75	4.86	82	0.82	***	***
1	500	8.83	34.679	26.91	4.63	73	1.25	***	***
1	700	7.27	34.533	27.03	4.30	65	1.54	***	***
1	900	5.67	34.469	27.20	4.21	61	1.79	***	***
1	1100	4.48	34.470	27.34	3.98	56	1.94	***	***
1	1300	3.58	34.527	27.47	3.63	50	2.05	***	***
1	1500	2.91	34.593	27.59	3.53	48	2.10	***	***

STATION G 1/ 79/64 DATE 5/ 2/64 TIME 1445 K LATITUDE 41 25 S LONGITUDE 149 24 E

SONIC AIR TEMP. WIND DIR. SP. WIND ANEM. CLOUD VIS. SEA DIR. AMT. SWELL DIR. AMT. ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. HEIGHT TYPE AMT. PRESSURE CAST1 CAST2 CAST3

4023 13.9 16.7 15 5 11 8 6 8 16 5 19 4 1019.5 10 5 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	18.13	***	***	5.39	***	0.15	***	***
2	25	18.13	***	***	5.39	***	0.16	***	***
2	50	17.17	***	***	5.36	***	0.19	***	***
2	75	16.38	***	***	5.27	***	0.28	***	***
2	100	16.15	***	***	5.22	***	0.30	***	***
2	150	13.87	***	***	4.74	***	0.63	***	***
2	200	12.83	***	***	4.56	***	0.82	***	***
2	300	11.45	***	***	4.63	***	0.94	***	***
2	500	8.75	***	***	4.68	***	1.08	***	***
1	700	7.36	***	***	4.45	***	1.50	***	***
1	900	5.88	34.466	27.17	4.22	62	1.74	***	***
1	1100	4.61	34.478	27.33	3.99	57	1.94	***	***
1	1300	3.57	34.513	27.46	3.70	51	1.99	***	***
1	1500	2.97	34.557	27.56	3.74	51	2.03	***	***
1	2000	2.29	34.677	27.71	3.88	52	2.00	***	***
1	2500	1.95	34.727	27.78	4.17	55	1.89	***	***

STATION G 1/ 80/64 DATE 5/ 2/64 TIME 2215 K LATITUDE 42 34 S LONGITUDE 149 23 E

SONIC AIR TEMP. WIND ANEM. CLOUD SEA SWELL ATMOS. WIRE ANGLES
 WET DRY DIR. SP. HEIGHT TYPE AMT. VIS. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3

3200 12.2 15.0 10 3 11 6 3 7 12 2 18 1 1022.0 5 5 *

CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	14.37	35.212	26.29	5.93	106	0.25	***	***
2	25	14.25	35.214	26.32	5.94	106	0.23	***	***
2	50	13.61	35.214	26.45	5.75	101	0.41	***	***
2	75	12.62	35.055	26.53	5.79	100	0.47	***	***
2	100	12.46	35.092	26.59	5.65	97	0.54	***	***
2	150	11.92	35.152	26.74	5.33	91	0.69	***	***
2	200	11.57	35.110	26.77	5.35	90	0.70	***	***
2	300	10.78	35.002	26.84	5.51	91	0.77	***	***
2	500	8.76	34.638	26.89	5.86	92	0.99	***	***
1	700	7.94	34.577	26.97	4.71	73	1.36	***	***
1	900	6.27	34.469	27.12	4.39	65	1.67	***	***
1	1100	4.62	34.429	27.29	4.25	60	1.90	***	***
1	1300	3.70	34.474	27.42	3.88	54	2.02	***	***
1	1500	3.08	34.530	27.52	3.77	51	2.08	***	***
1	2000	2.31	34.675	27.71	3.96	53	2.01	***	***
1	2500	1.95	34.726	27.78	4.22	56	1.95	***	***

OCEANOGRAPHICAL CRUISE REPORTS

1. Oceanographical observations in the Indian Ocean in 1959. H.M.A.S. *Diamantina* Cruises Dm1/59 and Dm2/59.
2. Oceanographical observations in the Indian Ocean in 1960. H.M.A.S. *Diamantina* Cruise Dm1/60.
3. Oceanographical observations in the Indian Ocean in 1960. H.M.A.S. *Diamantina* Cruise Dm2/60.
4. Oceanographical observations in the Indian Ocean in 1960. H.M.A.S. *Diamantina* Cruise Dm3/60.
5. Oceanographical observations in the Pacific Ocean in 1960. H.M.A.S. *Gascoyne* Cruises G1/60 and G2/60.
6. Oceanographical observations in the Pacific Ocean in 1960. H.M.A.S. *Gascoyne* Cruise G3/60.
7. Oceanographical observations in the Indian Ocean in 1961. H.M.A.S. *Diamantina* Cruise Dm1/61.
8. Oceanographical observations in the Pacific Ocean in 1961. H.M.A.S. *Gascoyne* Cruise G1/61.
9. Oceanographical observations in the Indian Ocean in 1961. H.M.A.S. *Diamantina* Cruise Dm2/61.
10. Oceanographical observations in the Indian and Pacific Oceans in 1961. H.M.A.S. *Gascoyne* Cruise G2/61.
11. Oceanographical observations in the Indian Ocean in 1961. H.M.A.S. *Diamantina* Cruise Dm3/61.
12. Oceanographical observations in the Pacific Ocean in 1961. H.M.A.S. *Gascoyne* Cruise G3/61.
13. Oceanographical observations in the Pacific Ocean in 1962. H.M.A.S. *Gascoyne* Cruise G1/62.
14. Oceanographical observations in the Indian Ocean in 1962. H.M.A.S. *Diamantina* Cruise Dm1/62.
15. Oceanographical observations in the Indian Ocean in 1962. H.M.A.S. *Diamantina* Cruise Dm2/62.
16. Oceanographical observations in the Pacific and Indian Oceans in 1962. H.M.A.S. *Gascoyne* Cruises G2/62 and G3/62.
17. Oceanographical observations in the Indian Ocean in 1962. H.M.A.S. *Gascoyne* Cruise G4/62.
18. Oceanographical observations in the Indian Ocean in 1962. H.M.A.S. *Diamantina* Cruise Dm3/62.
19. Oceanographical observations in the Pacific Ocean in 1962. H.M.A.S. *Gascoyne* Cruise G5/62.
20. Oceanographical observations in the Indian Ocean in 1962. H.M.A.S. *Diamantina* Cruise Dm4/62.
21. Oceanographical observations in the Indian Ocean in 1963. H.M.A.S. *Gascoyne* Cruise G1/63.
22. Oceanographical observations in the Indian Ocean in 1963. H.M.A.S. *Gascoyne* Cruise G2/63.
23. Oceanographical observations in the Indian Ocean in 1963. H.M.A.S. *Diamantina* Cruise Dm1/63.
24. Oceanographical observations in the Indian Ocean in 1963. H.M.A.S. *Diamantina* Cruise Dm2/63.
25. Oceanographical observations in the Indian Ocean in 1963. H.M.A.S. *Diamantina* Cruise Dm3/63.
29. Oceanographical observations in the Pacific Ocean in 1963. H.M.A.S. *Gascoyne* Cruise G4/63.
31. Oceanographical observations in the Pacific Ocean in 1963. H.M.A.S. *Gascoyne* Cruise G5/63.
32. Oceanographical observations in the Pacific Ocean in 1964. H.M.A.S. *Gascoyne* Cruise G1/64.
34. Oceanographical observations in the Indian Ocean in 1964. H.M.A.S. *Gascoyne* Cruise G2/64.
46. Oceanographical observations in the Indian Ocean in 1965. H.M.A.S. *Gascoyne* Cruise G5/65.