

OCEANOGRAPHICAL OBSERVATIONS
IN THE PACIFIC OCEAN IN 1964
H.M.A.S. *GASCOYNE*
Cruise G 6/64

OCEANOGRAPHICAL CRUISE REPORT
NO. 42

DIVISION OF FISHERIES AND OCEANOGRAPHY
COMMONWEALTH SCIENTIFIC AND INDUSTRIAL
RESEARCH ORGANIZATION, AUSTRALIA 1968

OCEANOGRAPHICAL CRUISE REPORT

No. 42

OCEANOGRAPHICAL OBSERVATIONS IN THE PACIFIC OCEAN IN 1964

H.M.A.S. GASCOYNE

Cruise G6/64

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION

AUSTRALIA

MELBOURNE, 1968

CONTENTS

	Page
I. INTRODUCTION	3
<u>Objectives</u>	3
<u>Itinerary</u>	3
<u>Scientific Personnel</u>	3
II. WORK ACCOMPLISHED	4
III. METHODS OF COLLECTION AND ANALYSIS OF SAMPLES	5
1. Physics	5
2. Chemistry	5
REFERENCES	7
IV. DATA SHEETS	8
Part 1 Hydrology - Surface Samples	9
Part 2 Hydrology - Subsurface Samples	15
V. FIGURES	
1 Track Chart	facing p. 3

When citing this report, abbreviate as follows:
CSIRO Aust. Oceanogr. Cruise Rep. 42.

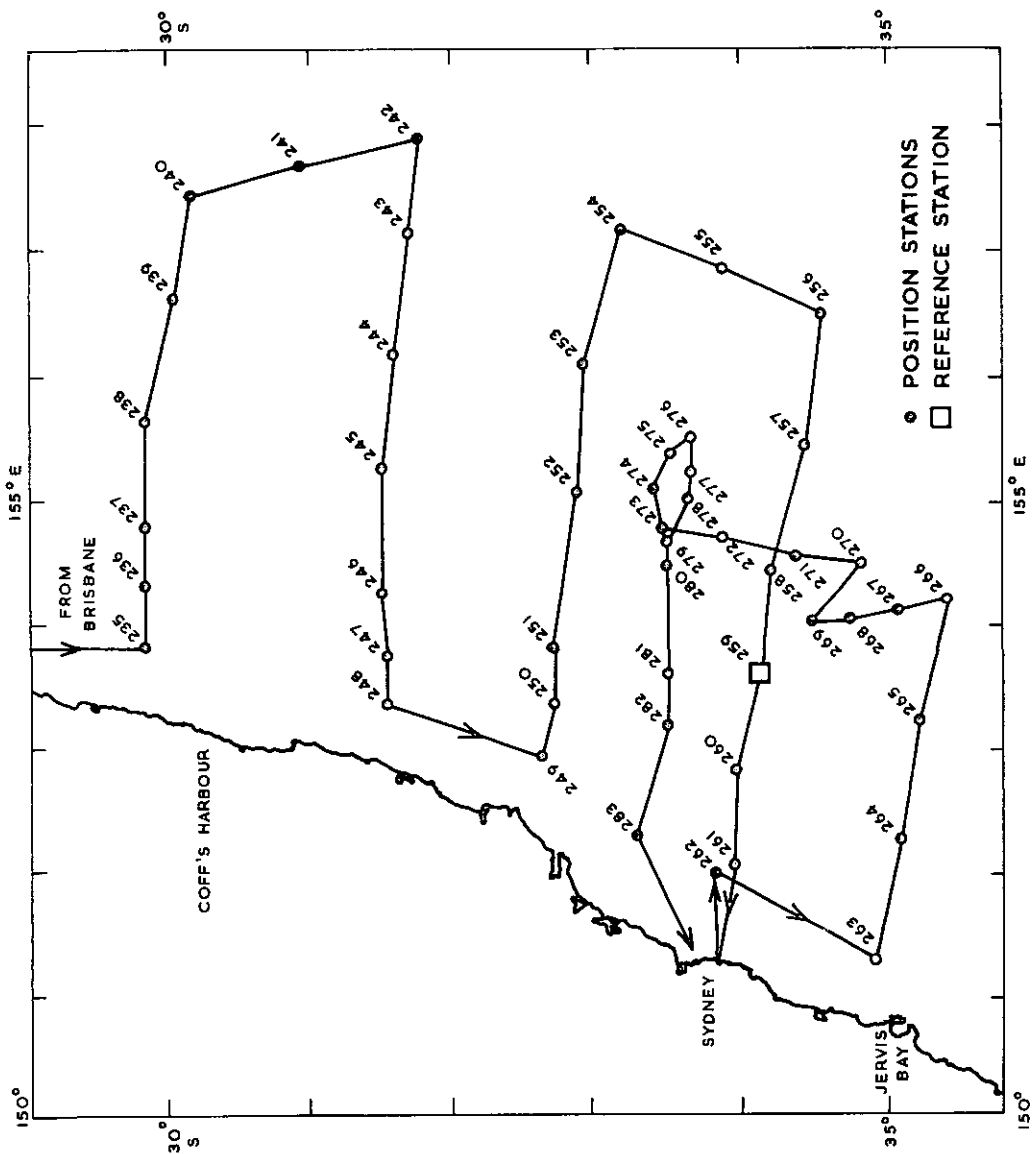


FIG. 1.— TRACK CHART

OCEANOGRAPHICAL CRUISE REPORT

No. 42

Oceanographical Observations in the Pacific Ocean in 1964

H.M.A.S. Gascoyne

Cruise G6/64

September 16-27, 1964

I. INTRODUCTION

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

Objectives

To study the dynamics of the East Australian Current system and its chemical structure in relation to its dynamics.

To test an acoustic link for the Temperature-Salinity-Depth (TSD) recorder.

Itinerary

The cruise began at Brisbane on September 16, worked a series of east-west and north-south sections off the New South Wales coast, and ended at Sydney on September 27 (Fig. 1).

Scientific Personnel

- B. Hamon (Cruise Leader)
- S. Chartres, Naval Research Laboratory, New Zealand
- F. Davies
- D. Lockwood (September 16-22)
- J. Prothero

The analyses of hydrological samples were done in the ship's laboratory by Messrs Davies and Prothero. Nitrate analyses were done at Cronulla by Mr Prothero. TSD and GEK observations were made on board by Messrs Hamon and Lockwood.

The data were processed, under the direction of Mr Hedge, by Mrs Bailey, Miss Hammond, Mrs Sander, and Miss Wanstall. The track chart was prepared for publication by Mr Breach.

II. WORK ACCOMPLISHED

Forty-nine stations were worked (G6/235/64-G6/283/64). Bathythermograph casts were made at all stations. Surface hydrology samples were collected at 47 stations and subsurface samples at 38. The GEK was streamed continuously, except between 1300 and 2200 h on September 25.

TABLE 1

WORK DONE AT EACH STATION

Stn No.	BT	Hydrology		Stn No.	BT	Hydrology	
		1	2			1	2
235	+	+	1500	260	+	+	940
236	+	+	1500	261	+		
237	+	+	1370	262	+	+	1500
238	+	+	1380	263	+	+	1500
239	+	+	1500	264	+	+	1500
240	+	+	1500	265	+	+	1320
241	+	+	1490	266	+	+	1500
242	+	+	1500	267	+	+	
243	+	+	1500	268	+	+	
244	+	+	1470	269	+	+	1500
245	+	+	1460	270	+	+	
246	+	+	1450	271	+		
247	+	+	1500	272	+	+	1400
248	+	+	1480	273	+	+	
249	+	+	1390	274	+	+	
250	+	+	1500	275	+	+	
251	+	+	1500	276	+	+	1500
252	+	+	1490	277	+	+	
253	+	+	1430	278	+	+	
254	+	+	1500	279	+	+	
255	+	+	1500	280	+	+	1500
256	+	+	1500	281	+	+	1500
257	+	+	1500	282	+	+	1440
258	+	+	1500	283	+	+	1300
259	+	+	4450				

BT Bathythermographs
Hydrology 1 Surface
 2 Surface to Depth (m)

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° to 30°C , and unprotected thermometers with a range of either -2° to 30°C , or -4° to 60°C . The accuracy of the temperatures is considered to be ± 0.03 degC.

GEK.—The circuit and method of use were the same as given in CSIRO Aust. (1963). 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. Slides were digitized according to the method of the U.S. National Oceanographic Data Centre (1964) and the results transferred to punched cards.

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 computed from temperature and salinity values using the equations of Knudsen (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 seawater samples. The version used is a modification of that described by Thompson and Robinson (1939) and differs in some respects from the revision by Jacobsen, Robinson, and Thompson (1950). Potassium iodate was used as the iodometric standard, and the reagents necessary to fix the oxygen in solution were used at different concentrations (Rochford 1963). Duplicate titrations were made on approximately every tenth sample. Saturation values were computed using the simpler of the equations given by Richards and Corwin (1956) -

$$\text{O}_2(\% \text{ Satn.}) = \frac{\text{O}_2(\text{ml/l}) \times (33.5 + T^{\circ}\text{C}) \times 100}{332.4 - (1.854 \times S\text{‰})}$$

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 dispensed automatically 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 commenced within 10 min of adding reagents, and completed within 10 min. At air temperatures greater than 25°C, analyses were carried out in batches of 6; readings were commenced 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 with no 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 should 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% 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 above for inorganic phosphate. Results are given as µg-atom/l with no salt correction. To correct for salt effects, the results given should be multiplied by 1.15.

Nitrate.—Samples taken at sea were stored in plastic bottles and preserved with 2 drops of saturated HgCl₂. 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. Five 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 mµ using a 5 mm cell. Samples with an

extinction 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 $\mu\text{g-atom/l}$.

REFERENCES

- ATKINS, W.R.G. (1923).—The phosphate content of fresh and salt waters and its relation to the growth of algal plankton. J. mar. biol. Ass. U.K. 13, 119-50.
- BROWN, N.L., and HAMON, B.V. (1961).—An inductive salinometer. Deep Sea Res. 3, 65-75.
- CSIRO AUST. (1963).—Oceanographical observations in the Pacific Ocean in 1960. H.M.A.S. Gascoyne, Cruise G3/60. CSIRO Aust. Oceanogr. Cruise Rep. 6.
- JACOBSEN, J.P., ROBINSON, R.J., and THOMPSON, T.G. (1950).—A review of the determination of dissolved oxygen in seawater by the Winkler method. Publs scient. Ass. Oceanogr. phys. 11.
- LA FOND, E.C. (1951).—Processing oceanographic data. U.S. Navy Hydrogr. Off. Publ. No. 614.
- POLLAK, M.J. (1950).—Notes on determining the depths of sampling in serial oceanographic observations. J. mar. Res. 9, 17-20.
- RICHARDS, F.A., and CORWIN, N. (1956).—Some oceanographic applications of the solubility of oxygen in sea-water. Limnol. Oceanogr. 1, 263-7.
- ROCHFORD, D.J. (1947).—The preparation and use of Harvey's reduced strychnine reagent in oceanographical chemistry. Bull. Coun. scient. ind. Res., Melb. No. 220.
- ROCHFORD, D.J. (1963).—SCOR-UNESCO chemical intercalibration tests; results of 2nd series, R.S. Vityaz August 2-9, 1962, Australia. (Mimeogr.) (CSIRO:Cronulla)
- THOMPSON, T.G., and ROBINSON, R.J. (1939).—Notes on the determination of dissolved oxygen in seawater. J. mar. Res. 2, 1-8.

U.S. NATIONAL OCEANOGRAPHIC DATA CENTRE (1964).—Manual for processing bathythermograph data. Part 1 Instructions for manually digitizing bathythermograph data. Publ. M-3. (U.S. Naval Oceanographic Office : Washington, D.C.)

U.S. NAVY HYDROGRAPHIC OFFICE (1955).—Instruction manual for oceanographic observations. Publ. No. 607.

IV. DATA SHEETS

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

DATA
PART 1
HYDROLOGY
SURFACE SAMPLES

EXPLANATION OF HEADINGS

Parts 1 and 2Hydrology

STATION	Gives the station identification. For example, G6/235/64 signifies the 235th station worked by <u>Gascoyne</u> in 1964, on her 6th 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)
WEA.	Weather is coded using Table 1 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., or 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 µg-atom/l

A blank, *, and *** indicate no data available

CRUISE NUMBER	STATION	YR.	MTH.	DAY	TIME	Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND DN, AMT.	SEA DN, AMT.	SWELL DN, AMT.	WEA.	VIS.	BAROM.			
6	235	64	9	17	0215	K 29	51 S	153	E 21.3	35.45	22	6	22	4	01	1	01	1013.0	
6	236	64	9	17	0530	K 29	52 S	154	E 22.2	35.43	19	6	19	3	20	4	00	1016.0	
6	237	64	9	17	0930	K 29	52 S	154	E 22.6	35.39	20	5	19	3	20	4	00	1017.0	
6	238	64	9	17	1427	K 29	53 S	155	E 19.4	35.60	22	5	22	3	20	4	01	1016.0	
6	239	64	9	17	1950	K 30	02 S	156	E 19.4	35.59	20	3	20	2	19	4	01	1019.0	
6	240	64	9	18	0120	K 30	09 S	157	E 19.1	35.60	21	4	21	2	21	4	01	1020.0	
6	241	64	9	18	0650	K 30	54 S	157	E 19.2	35.59	19	6	19	3	18	1	01	1021.5	
6	242	64	9	18	1215	K 31	49 S	157	E 19.4	35.59	19	5	20	4	21	4	01	1023.0	
6	243	64	9	18	1732	K 31	46 S	157	E 18.4	35.58	20	3	20	2	21	4	01	1024.0	
6	244	64	9	18	2326	K 31	36 S	156	E 19.4	35.61	00	0	21	0	21	1	01	1025.0	
6	245	64	9	19	0500	K 31	28 S	155	E 19.0	35.62	02	1	00	0	20	1	00	1024.0	
6	246	64	9	19	1019	K 31	28 S	154	E 22.3	35.44	00	4	00	2	18	4	01	1025.0	
6	247	64	9	19	1325	K 31	31 S	153	E 20.7	35.52	35	5	35	3	17	4	00	1022.0	
6	248	64	9	19	1600	K 31	31 S	153	E 20.6	35.55	34	3	34	2	17	1	00	1021.4	
6	249	64	9	19	2224	K 32	40 S	152	E 21.2	35.49	34	2	21	1	00	8	1022.0		
6	250	64	9	20	0115	K 32	46 S	153	E 19.4	35.62	34	1	34	2	19	1	00	1020.0	
6	251	64	9	20	0440	K 32	50 S	153	E 19.2	35.62	34	3	34	2	35	1	00	1019.5	
6	252	64	9	20	1018	K 32	57 S	155	E 19.1	35.62	33	4	33	2	34	4	01	1020.0	
6	253	64	9	20	1550	K 32	58 S	156	E 18.2	35.59	34	5	34	4	33	4	02	1017.5	
6	254	64	9	20	2130	K 33	12 S	157	E 17.3	35.55	35	3	34	3	31	1	01	1017.0	
6	255	64	9	21	0205	K 33	52 S	156	E 18.1	35.59	29	4	29	2	35	1	22	5	1013.7
6	256	64	9	21	0648	K 34	31 S	156	E 17.7	35.52	32	2	32	2	32	4	03	7	1012.5
6	257	64	9	21	1300	K 34	21 S	155	E 17.6	35.55	20	4	19	3	02	4	00	8	1013.0
6	258	64	9	21	1835	K 34	09 S	154	E 19.3	35.62	16	3	16	2	19	1	01	7	1014.0
6	259	64	9	21	2325	K 34	07 S	153	E 19.2	35.63	14	1	14	2	16	1	01	8	1011.0
6	260	64	9	22	0600	K 33	58 S	152	E 21.4	34.72	05	4	04	2	17	1	01	7	1013.0
6	261	64	9	22	1000	K 33	58 S	152	E 03 E	34.72	03	5	03	3	17	1	01	7	1013.0
6	262	64	9	22	1200	K 33	51 S	152	E 18.4	35.55	25	5	25	2	23	1	01	7	1009.0
6	263	64	9	22	1937	K 34	56 S	151	E 17.2	35.59	27	8	25	4	25	4	00	8	1012.6
6	264	64	9	24	0137	K 35	05 S	152	E 20.0	35.56	26	7	26	4	23	4	01	8	1014.2
6	265	64	9	24	0700	K 35	14 S	153	E 18.0	35.60	24	4	24	4	23	4	01	8	1015.0
6	266	64	9	24	1200	K 35	28 S	154	E 16.7	35.56	23	5	23	3	24	4	01	8	1017.5
6	267	64	9	24	1600	K 35	01 S	154	E 18.6	35.61	24	3	24	2	23	4	01	8	1017.0
6	268	64	9	24	1800	K 34	40 S	154	E 20.5	35.56	20	3	20	2	22	4	01	8	1019.1
6	269	64	9	24	1912	K 34	31 S	154	E 20.0	35.58	18	2	18	2	21	1	00	8	1019.5
6	270	64	9	24	2230	K 34	44 S	154	E 19.5	35.62	17	1	00	0	21	4	00	8	1018.5
6	271	64	9	25	0100	K 34	15 S	154	E 19.5	35.62	00	0	00	0	21	4	01	8	1018.0
6	272	64	9	25	0315	K 33	51 S	154	E 19.0	35.65	00	1	00	0	19	4	01	8	1018.0
6	273	64	9	25	0600	K 33	25 S	154	E 19.2	35.62	34	2	34	1	19	1	01	8	1019.0
6	274	64	9	25	0700	K 33	26 S	155	E 19.2	35.62	01	1	01	1	19	1	02	8	1020.0

CRUISE NUMBER	STATION NUMBER	YR.	MTH.	DAY	TIME	Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND DN. AMT.	SEA DN. AMT.	SWELL DN. AMT.	WEA.	VIS.	BAROM.				
6	275	64	9	25	0800	K 33	30 S	155	13 E	17.7	35.59	02	2	01	1	18	1	01	8	1020.0
6	276	64	9	25	0925	K 33	36 S	155	25 E	17.6	35.55	03	2	01	1	19	1	01	8	1020.5
6	277	64	9	25	1100	K 33	34 S	155	12 E	17.7	35.59	30	2	31	2	20	1	01	8	1019.0
6	278	64	9	25	1200	K 33	33 S	155	01 E	19.1	35.61	34	2	33	2	20	1	01	8	1018.5
6	279	64	9	25	1300	K 33	31 S	154	49 E	19.8	35.62	02	2	02	2	17	1	01	8	1016.8
6	280	64	9	25	1415	K 33	30 S	154	37 E	19.5	35.62	01	4	01	3	20	1	03	7	1016.0
6	281	64	9	25	1930	K 33	30 S	153	42 E	22.1	35.44	35	5	35	3	20	1	02	7	1015.0
6	282	64	9	25	2220	K 33	29 S	153	16 E	22.0	35.47	23	4	23	2	18	1	01	7	1016.5
6	283	64	9	26	0340	K 33	22 S	152	21 E	20.6	35.52	19	5	19	3	20	1	02	7	1018.0

DATA
PART 2
HYDROLOGY
SUBSURFACE SAMPLES

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 235/64	17/ 9/64	0215 K	29 51 S	153 51 E					
SONIC AIR TEMP.	WIND	ANEM.	CLOUD	SEA	SWELL	ATMOS.	WIRE ANGLES		
DEPTH WET DRY	DIR. SP.	HEIGHT	TYPE	DIR. AMT.	DIR. AMT.	PRESSURE	CAST1 CAST2 CAST3		
2450	9.4 18.3 22 6	11	0 1	8 22 4	01 1	1013.0	* * *		
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	21.28	35.455	24.78	4.89	97	0.20	***	***
1	25	21.30	35.467	24.79	4.91	97	0.18	***	***
1	50	20.80	35.486	24.94	4.66	91	0.28	***	***
1	75	19.23	35.542	25.39	3.93	75	0.51	***	***
1	100	17.99	35.514	25.69	3.81	71	0.60	***	***
1	150	16.56	35.433	25.97	3.91	71	0.81	***	***
1	200	15.25	35.333	26.19	3.94	69	0.74	***	***
1	300	12.96	35.128	26.52	4.16	70	0.91	***	***
1	500	9.62	34.774	26.86	4.36	68	1.23	***	***
1	700	7.47	34.548	27.02	4.33	64	1.60	***	***
1	900	6.09	34.472	27.15	4.21	60	1.74	***	***
1	1100	4.68	34.494	27.33	3.94	55	1.96	***	***
1	1300	3.66	34.551	27.49	3.58	49	2.09	***	***
1	1500	3.01	34.594	27.58	3.41	46	2.15	***	***

STATION G 6/ 236/64 DATE 17/ 9/64 TIME 0530 K LATITUDE 29 52 S LONGITUDE 154 18 E

SONIC AIR TEMP. WIND DIR. SP. WIRE ANGLES
 DEPTH WET DRY DIR. SP. ANEM. HEIGHT TYPE AMT. CLOUD SEA DIR. AMT. ATMOS. PRESSURE CAST1 CAST2 CAST3
 4499 15.0 17.8 19 6 11 * * 8 19 3 20 4 1016.0 10 * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	22.23	35.433	24.50	***	***	***	***	***
1	25	22.23	35.442	24.51	***	***	***	***	***
1	50	22.24	35.447	24.51	***	***	***	***	***
1	75	22.22	35.448	24.51	***	***	***	***	***
1	100	22.04	35.490	24.60	***	***	***	***	***
1	150	20.27	35.605	25.17	***	***	***	***	***
1	200	19.60	35.610	25.35	***	***	***	***	***
1	300	16.24	35.424	26.04	***	***	***	***	***
1	500	10.91	34.914	26.74	***	***	***	***	***
1	700	8.09	34.603	26.97	***	***	***	***	***
1	900	6.22	34.481	27.14	***	***	***	***	***
1	1100	4.96	34.470	27.28	***	***	***	***	***
1	1300	3.88	34.519	27.44	***	***	***	***	***
1	1500	3.20	34.572	27.55	***	***	***	***	***

1964 09 17 0530 K

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 237/64	17/ 9/64	0930 K	29 52 S	154 48 E					
SONIC AIR TEMP.	WIND DIR. SP.	WIND DIR. SP.	SEA DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES				
DEPTH MET DRY	ANEM. HEIGHT	CLOUD TYPE AMT.	VIS. DIR. AMT.	CAST1 CAST2 CAST3					
4352	8.3 18.3 20 5 11	8 1 0 1	8 19 3 20 4	1017.0	10 * *				
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	22.62	35.390	24.36	4.80	97	0.21	***	***
1	22	22.64	35.391	24.35	4.77	97	0.16	***	***
1	42	22.66	***	***	4.78	***	0.15	***	***
1	64	22.32	35.441	24.48	4.63	93	0.18	***	***
1	85	22.01	35.494	24.61	4.44	89	0.22	***	***
1	127	19.76	35.593	25.30	4.99	96	0.20	***	***
1	170	19.65	35.570	25.31	4.19	80	0.21	***	***
1	255	18.42	35.593	25.64	4.68	88	0.35	***	***
1	430	13.76	35.238	26.44	4.19	71	0.78	***	***
1	610	10.19	34.841	26.81	4.37	69	1.19	***	***
1	796	7.73	34.574	27.00	4.34	65	1.51	***	***
1	986	5.74	34.468	27.19	4.12	59	1.78	***	***
1	1178	4.52	34.483	27.34	3.83	53	1.91	***	***
1	1371	3.64	34.534	27.47	3.60	49	2.09	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE						
G 6/ 238/64	17/ 9/64	1427 K	29 53 S	155 38 E						
SONIC AIR TEMP.	WIND DIR.	SP. WET DRY	WIND DIR.	SEA DIR.	AMT. SWELL DIR.	AMT. ATMOS. PRESSURE	CAST1	CAST2	CAST3	WIRE ANGLES
4682	12.8 18.3	22 5	11	3 5	8 22 3	20 4	1016.0	10	*	*
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE	
1	0	19.38	35.599	25.40	5.18	99	0.18	***	***	
1	23	19.32	35.607	25.42	5.18	99	0.18	***	***	
1	46	19.29	35.600	25.42	5.16	98	0.18	***	***	
1	69	19.23	35.599	25.44	5.08	97	0.20	***	***	
1	91	19.11	35.616	25.48	4.99	95	0.22	***	***	
1	136	18.96	35.608	25.51	4.87	92	0.27	***	***	
1	182	18.80	35.603	25.55	4.73	89	0.32	***	***	
1	272	17.05	35.501	25.91	4.13	75	0.54	***	***	
1	452	13.60	35.221	26.46	4.16	71	0.79	***	***	
1	632	9.68	34.780	26.85	4.49	70	1.18	***	***	
1	814	7.44	34.548	27.02	4.31	64	1.50	***	***	
1	998	5.70	34.463	27.19	4.13	59	1.71	***	***	
1	1186	4.84	34.475	27.30	3.96	55	1.82	***	***	
1	1376	3.76	34.530	27.46	3.67	50	1.98	***	***	

STATION G 6/239/64 DATE 17/9/64 TIME 1950 K LATITUDE 30 02 S LONGITUDE 156 37 E

SONIC AIR TEMP. WIND DIR. SP. WIND DIR. SP. CLOUD TYPE AMT. VIS. SEA DIR. AMT. SWELL DIR. AMT. ATMOS. PRESSURE WIRE ANGLES
 DEPTH WET DRY 4682 9.4 17.2 20 3 11 0 3 8 20 2 19 4 1019.0 5 * * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	19.36	35.587	25.40	5.02	96	0.17	***	***
1	25	19.38	35.599	25.40	4.99	95	0.18	***	***
1	50	19.36	35.601	25.41	5.08	97	0.22	***	***
1	75	19.27	35.604	25.43	5.16	98	0.21	***	***
1	100	19.24	35.601	25.44	5.01	95	0.21	***	***
1	150	18.92	35.595	25.52	4.64	88	0.32	***	***
1	200	18.75	35.600	25.56	4.84	91	0.28	***	***
1	300	17.08	35.521	25.91	4.44	81	0.45	***	***
1	500	12.00	35.079	26.67	4.38	72	0.87	***	***
1	700	8.78	34.668	26.91	4.37	67	1.30	***	***
1	900	6.81	34.511	27.08	4.30	63	1.56	***	***
1	1100	5.35	34.470	27.24	4.02	57	1.78	***	***
1	1300	4.24	34.501	27.39	3.77	52	1.91	***	***
1	1500	3.37	34.561	27.52	3.43	46	2.07	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE												
G 6/ 241/64	18/ 9/64	0650 K	30 54 S	157 40 E												
SONIC AIR TEMP.	WIND DIR. SP.	WIND DIR. SP.	SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1 CAST2 CAST3										
DEPTH WET DRY	16.9 19 6	11 4 2	8 19 3	18 1	1021.5	0 * *										
2999	8.9	16.9	19	6	11	4	2	8	19	3	18	1	1021.5	0	*	*
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE							
1	0	19.17	35.594	25.45	5.01	95	0.19	***	***							
1	25	19.20	35.601	25.45	4.97	95	0.19	***	***							
1	50	19.21	35.601	25.45	5.04	96	0.19	***	***							
1	75	19.18	35.601	25.45	4.95	94	0.18	***	***							
1	100	18.92	35.605	25.52	4.75	90	0.27	***	***							
1	150	18.82	35.603	25.55	4.79	90	0.28	***	***							
1	200	18.69	35.594	25.57	4.63	87	0.30	***	***							
1	300	16.15	35.449	26.08	4.20	75	0.57	***	***							
1	495	11.81	35.050	26.68	4.39	72	0.92	***	***							
1	693	8.64	34.652	26.92	4.44	67	1.29	***	***							
1	892	6.48	34.490	27.11	4.20	61	1.61	***	***							
1	1090	5.01	34.473	27.28	3.97	55	1.82	***	***							
1	1289	3.93	34.514	27.43	3.71	51	2.00	***	***							
1	1486	3.22	34.565	27.54	3.48	47	2.08	***	***							

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 242/64	18/ 9/64	1215 K	31 49 S	157 54 E					
SONIC AIR TEMP.	WIND DIR. SP.	ANEM. HEIGHT	CLOUD TYPE	AMT.	SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1 CAST2 CAST3	
DEPTH WET DRY	10.0 16.1	19 5	11	6 3	8 20 4	21 4	1023.0	10 * *	
3072									
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	19.36	35.591	25.40	5.11	98	0.16	***	***
1	25	19.34	35.590	25.40	5.09	97	0.16	***	***
1	50	19.19	35.605	25.45	5.02	95	0.18	***	***
1	75	19.01	35.603	25.50	4.92	93	0.23	***	***
1	100	18.83	35.603	25.54	4.75	90	0.27	***	***
1	150	18.01	35.562	25.72	4.32	80	0.47	***	***
1	200	16.61	35.480	25.99	4.20	76	0.48	***	***
1	300	13.93	35.276	26.43	4.32	74	0.63	***	***
1	500	10.30	34.866	26.81	4.40	69	0.95	***	***
1	700		34.567	27.00	4.26	63	1.27	***	***
1	900	5.79	34.468	27.18	4.09	58	1.54	***	***
1	1100	4.46	34.479	27.35	3.80	52	1.68	***	***
1	1300	3.59	34.535	27.48	3.50	47	2.01	***	***
1	1500	3.00	34.592	27.58	3.41	45	2.10	***	***

STATION		DATE		TIME		LATITUDE		LONGITUDE							
G 6/ 243/64		18/ 9/64		1732 K		31 46 S		157 07 E							
SONIC AIR TEMP.		WIND		VIS.		SEA		SWELL		ATMOS.		WIRE ANGLES			
DEPTH WET DRY		DIR. SP.		DIR. AMT.		DIR. AMT.		DIR. AMT.		PRESSURE		CAST1 CAST2 CAST3			
3749	9.4 16.1	20	3	11	6	2	8	20	2	21	4	1024.0	10	*	*
CAST	DEPTH	TFMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE					
1	0	18.36	35.576	25.64	5.31	99	99	0.18	***	***					
1	25	18.29	35.582	25.66	5.21	97	97	0.21	***	***					
1	50	18.01	35.563	25.72	5.15	96	96	0.25	***	***					
1	75	16.67	35.475	25.97	4.26	77	77	0.56	***	***					
1	100	15.78	35.410	26.13	4.23	75	75	0.60	***	***					
1	150	14.99	35.451	26.34	4.94	86	86	0.52	***	***					
1	200	14.26	35.407	26.46	4.89	84	84	0.56	***	***					
1	300	11.98	35.104	26.69	4.56	75	75	0.87	***	***					
1	500	8.66	34.667	26.93	4.39	67	67	1.30	***	***					
1	700	6.80	34.512	27.08	4.29	62	62	1.59	***	***					
1	900	5.37	34.468	27.23	4.03	57	57	1.80	***	***					
1	1100	4.26	34.493	27.38	3.87	53	53	1.95	***	***					
1	1300	3.35	34.554	27.52	3.48	47	47	2.06	***	***					
1	1500	2.83	34.605	27.61	3.44	46	46	2.09	***	***					

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 244/64	18/ 9/64	2326 K	31 36 S	156 11 E					
4627	8.9 16.1 00. 0	11	8 3	8 00 0					
SONIC AIR TEMP.	WIND DIR. SP.	ANEM. HEIGHT	CLOUD TYPE AMT.	VIS. SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1 CAST2 CAST3		
DEPTH WET DRY	00. 0	11	8 3	8 00 0	21 1	1025.0	5 * *		
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN X SAT.	INORG. P	TOTAL P	NITRATE
1	0	19.41	35.613	25.40	5.06	97	0.19	***	***
1	25	19.37	35.614	25.41	4.98	95	0.20	***	***
1	50	19.18	35.615	25.46	4.98	95	0.24	***	***
1	75	19.12	35.614	25.48	4.82	92	0.25	***	***
1	100	19.01	35.619	25.51	4.92	93	0.25	***	***
1	150	18.91	35.616	25.53	4.98	94	0.25	***	***
1	200	18.64	35.594	25.58	4.60	87	0.33	***	***
1	299	16.18	35.443	26.06	4.17	75	0.59	***	***
1	496	11.31	34.974	26.72	4.29	69	1.04	***	***
1	692	8.47	34.639	26.94	4.29	65	1.36	***	***
1	887	6.89	34.513	27.07	4.21	61	1.60	***	***
1	1081	5.33	34.469	27.24	3.94	55	1.85	***	***
1	1275	4.14	34.505	27.40	3.65	50	2.01	***	***
1	1467	3.34	34.560	27.52	3.50	47	2.13	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 245/64	19/ 9/64	0500 K	31 28 S	155 13 E					
SONIC AIR TEMP.	WIND DIR. SP.	CLOUD	SEA	ATMOS.	WIRE ANGLES				
DEPTH WET DRY	HEIGHT	TYPE	DIR. AMT.	PRESSURE	CAST1 CAST2 CAST3				
4673 12.2 16.1	02 1 11	* 0	* 7	1024.0	0 * *				
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	19.04	35.619	25.50	5.08	96	0.22	***	***
1	25	19.06	35.614	25.49	5.11	97	0.20	***	***
1	49	19.08	35.614	25.49	5.16	98	0.21	***	***
1	73	19.02	35.615	25.50	5.05	96	0.20	***	***
1	97	19.02	35.617	25.51	5.02	95	0.21	***	***
1	146	18.92	35.613	25.53	4.82	91	0.28	***	***
1	195	18.80	35.609	25.56	4.88	92	0.29	***	***
1	291	17.58	35.541	25.81	4.09	75	0.49	***	***
1	486	13.81	35.272	26.46	4.24	72	0.81	***	***
1	680	10.37	34.871	26.81	4.47	71	1.12	***	***
1	874	7.83	34.582	26.99	4.34	65	1.48	***	***
1	1068	6.17	34.485	27.15	4.14	59	1.70	***	***
1	1263	4.92	34.473	27.29	3.91	55	1.80	***	***
1	1457	3.93	34.525	27.44	3.68	50	1.98	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE					
CG 6/246/64	19/9/64	1019 K	31 28 S	154 15 E					
SONIC AIR TEMP.	ANEM. HEIGHT	SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1 CAST2 CAST3				
DEPTH WET DRY	DIR. SP.	WIND DIR. SP.	CLOUD TYPE AMT.	VIS. DIR. AMT.	CAST1 CAST2 CAST3				
4444 15.0 20.0	00 4	11	8 5	8 00 2	5 * *				
CAS	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	22.27	35.439	24.49	4.85	98	0.20	***	***
1	25	22.27	35.438	24.49	4.81	97	0.19	***	***
1	50	22.27	35.438	24.49	4.88	98	0.18	***	***
1	74	22.26	35.439	24.50	4.76	96	0.20	***	***
1	99	21.77	35.480	24.67	4.54	91	0.25	***	***
1	148	20.26	35.609	25.17	4.76	92	0.24	***	***
1	197	19.18	35.551	25.41	3.88	74	0.46	***	***
1	296	17.04	35.457	25.87	3.89	71	0.58	***	***
1	491	12.93	35.144	26.34	4.24	71	0.78	***	***
1	683	9.77	34.780	26.84	4.37	68	1.05	***	***
1	876	7.16	34.524	27.04	4.29	63	1.38	***	***
1	1067	5.74	34.471	27.19	4.19	60	1.54	***	***
1	1260	4.56	34.483	27.34	3.88	54	1.91	***	***
1	1453	3.62	34.540	27.48	3.59	49	2.01	***	***

STATION G 6/ 247/64 DATE 19/ 9/64 TIME 1325 K LONGITUDE 153 45 E
 LATITUDE 31 31 S

SONIC AIR TEMP. WIND ANEM. CLOUD SEA SWELL ATMOS. WIRE ANGLES
 WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2 CAST3
 4323 10.0 19.4 35 5 11 * 0 * 8 35 3 17 4 1022.0 5 * * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	20.72	35.521	24.99	***	***	***	***	***
1	25	20.33	35.952	25.11	***	***	***	***	***
1	50	19.84	35.586	25.27	***	***	***	***	***
1	75	19.24	35.611	25.45	***	***	***	***	***
1	100	19.08	35.611	25.48	***	***	***	***	***
1	150	18.65	35.607	25.59	***	***	***	***	***
1	200	18.02	35.557	25.71	***	***	***	***	***
1	300	15.18	35.352	26.22	***	***	***	***	***
1	500	10.75	34.906	26.77	***	***	***	***	***
1	700	8.30	34.617	26.95	***	***	***	***	***
1	900	6.18	34.477	27.14	***	***	***	***	***
1	1100	4.87	34.473	27.29	***	***	***	***	***
1	1300	3.97	34.511	27.42	***	***	***	***	***
1	1500	3.28	34.562	27.53	***	***	***	***	***

STATION G 6/ 248/64 DATE 19/ 9/64 TIME 1600 K LATITUDE 31 31 S LONGITUDE 153 21 E

SONIC AIR TEMP. WIND DIR. SP. WIND DIR. SP. ANEM. HEIGHT TYPE AMT. CLOUD TYPE AMT. VIS. DIR. AMT. SEA DIR. AMT. SWELL DIR. AMT. ATMOS. PRESSURE CAST1 CAST2 CAST3
 1682 12.8 20.0 34 3 11 * 0 * 0 8 34 2 17 1 1021.4 10 * * *

CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	20.64	35.553	25.03	5.13	100	0.18	***	***
1	25	20.10	35.577	25.19	5.05	98	0.23	***	***
1	50	19.74	35.610	25.31	5.05	97	0.18	***	***
1	74	19.54	35.609	25.36	4.94	95	0.23	***	***
1	99	19.13	35.607	25.47	4.76	90	0.27	***	***
1	148	18.31	35.555	25.64	4.09	76	0.49	***	***
1	197	16.94	35.474	25.91	4.00	73	0.59	***	***
1	296	14.51	35.295	26.32	4.12	71	0.74	***	***
1	493	10.42	34.869	26.80	4.34	69	1.11	***	***
1	690	7.75	34.568	26.99	4.30	64	1.47	***	***
1	888	6.01	34.473	27.16	4.17	60	1.72	***	***
1	1085	4.82	34.473	27.30	3.99	56	1.88	***	***
1	1282	3.94	34.514	27.43	3.66	50	1.98	***	***
1	1479	3.20	34.568	27.54	3.49	47	2.10	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE									
G 6/ 249/64	19/ 9/64	2224 K	32 40 S	152 59 E									
SONIC AIR TEMP.	WIND DIR. SP.	WIND DIR. SP.	SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1 CAST2 CAST3							
DEPTH 11.7	19.4	34	2	11	* 0	* 8	* *	* 21	1	1022.0	15	*	*
CAS	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE				
1	0	21.17	35.486	24.84	4.88	96	0.18	***	***				
1	23	21.06	35.488	24.87	4.93	97	0.18	***	***				
1	46	20.08	35.544	25.17	3.83	74	0.47	***	***				
1	69	19.33	35.557	25.38	3.83	73	0.49	***	***				
1	92	18.67	35.521	25.52	3.78	71	0.54	***	***				
1	139	18.16	35.551	25.67	4.34	81	**	***	***				
1	277	15.86	35.352	26.07	4.22	75	0.62	***	***				
1	452	12.56	34.958	26.47	4.24	70	0.96	***	***				
1	646	9.18	34.695	26.87	4.30	66	1.20	***	***				
1	830	7.05	34.522	27.06	4.31	63	1.46	***	***				
1	1015	5.61	34.479	27.21	4.14	59	1.67	***	***				
1	1200	4.54	34.485	27.34	3.85	53	1.86	***	***				
1	1384	3.46	34.553	27.51	3.53	48	1.97	***	***				

STATION	DATE	TIME	LATITUDE		LONGITUDE				
G 6/ 250/64	20/ 9/64	0115 K	32	46 S	153	21 E			
SONIC AIR TEMP.	WIND DIR. SP.	CLOUD AMT.	SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1 CAST2 CAST3			
DEPTH MET DRY	10.6 20.0 34 1	11 * 0	8 34 2	19 1	1020.0	0 * *			
4169	10.6 20.0 34 1	11 * 0	8 34 2	19 1	1020.0	0 * *			
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	19.45	35.616	25.39	***	***	0.19	***	***
1	25	19.30	35.625	25.44	***	***	0.19	***	***
1	50	19.31	35.630	25.44	***	***	0.19	***	***
1	75	19.31	35.630	25.44	***	***	0.20	***	***
1	100	19.09	35.615	25.49	***	***	0.23	***	***
1	150	18.81	35.598	25.54	***	***	0.30	***	***
1	200	18.72	35.600	25.57	***	***	0.28	***	***
1	300	16.81	35.501	25.96	***	***	0.44	***	***
1	500	12.47	35.110	26.60	***	***	0.79	***	***
1	700	9.03	34.698	26.90	***	***	1.09	***	***
1	900	7.12	34.528	27.05	***	***	1.35	***	***
1	1100	5.26	34.468	27.25	***	***	1.55	***	***
1	1300	4.28	34.496	27.38	***	***	1.87	***	***
1	1500	3.43	34.552	27.51	***	***	2.00	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 251/64	20/ 9/64	0440 K	32 50 S	153 52 E					
SONIC AIR TEMP.	WIND	ANEM.	CLOUD	SEA	VIS.	DIR. AMT.	SMELL	ATMOS.	WIRE ANGLES
DEPTH WET DRY	DIR. SP.	HEIGHT	TYPE	TYPE	DIR. AMT.	DIR. AMT.	DIR. AMT.	PRESSURE	CAST1 CAST2 CAST3
4645 13.9 19.4	34 3	11	* 0	7	34 2	35 1	1019.5	5	* * *
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	19.22	35.617	25.45	5.16	98	0.19	***	***
1	25	19.19	35.620	25.46	5.12	97	0.19	***	***
1	50	19.12	35.619	25.48	5.12	97	0.19	***	***
1	75	19.08	35.617	25.49	5.06	96	0.21	***	***
1	100	18.97	35.607	25.51	4.94	94	0.25	***	***
1	150	18.80	35.595	25.55	4.74	89	0.30	***	***
1	200	18.65	35.587	25.58	4.47	84	0.37	***	***
1	300	17.29	35.546	25.88	4.10	75	0.52	***	***
1	500	13.44	35.219	26.49	4.19	71	0.82	***	***
1	700	9.61	34.793	26.84	4.30	67	1.19	***	***
1	900	7.51	34.555	27.02	4.24	63	1.47	***	***
1	1100	5.62	34.476	27.18	4.16	59	1.73	***	***
1	1300	4.56	34.483	27.34	3.83	53	1.89	***	***
1	1500	3.71	34.532	27.47	3.62	49	2.03	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 253/64	20/ 9/64	1550 K	32 58 S	156 07 E					
SONIC AIR TEMP.	WIND	ANEM.	CLOUD	SEA	VIS.	DIR. AMT.	SHELL	ATMOS.	WIRE ANGLES
DEPTH WET DRY	DIR. SP.	HEIGHT	TYPE	AMT.	DIR. AMT.	DIR. AMT.	DIR. AMT.	PRESSURE	CAST1 CAST2 CAST3
1536 14.4 20.0	34 5	11	6 8	*	34 4	33 4	1017.5	10	* *
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.19	35.595	25.70	5.38	100	0.20	***	***
1	24	17.52	35.555	25.83	5.15	95	0.29	***	***
1	48	17.42	35.550	25.85	5.05	93	0.33	***	***
1	71	17.06	35.548	25.94	5.06	92	0.34	***	***
1	95	16.70	35.535	26.01	5.26	95	0.31	***	***
1	142	15.32	35.407	26.23	4.52	80	0.59	***	***
1	190	14.18	35.312	26.41	4.49	77	0.66	***	***
1	285	13.24	35.314	26.60	4.97	84	0.63	***	***
1	475	9.96	34.820	26.84	4.39	69	1.11	***	***
1	665	7.96	34.591	26.98	4.33	65	1.40	***	***
1	855	6.24	34.485	27.14	4.24	61	1.61	***	***
1	1045	5.00	34.471	27.28	4.01	56	1.78	***	***
1	1235	4.05	34.505	27.41	3.75	51	1.92	***	***
1	1425	3.31	34.563	27.53	3.54	48	1.95	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 254/64	20/ 9/64	2130 K	33 12 S	157 11 E					
SONIC AIR TEMP.	WIND DIR. SP.	CLOUD AMT.	ANEM. HEIGHT	SEA DIR. AMT.	VIS. DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1 CAST2 CAST3	
3731 12.8 18.9 35 3	11 6 3	7 34 3	31 1	1017.0	0	*	*	*	
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.31	35.551	25.88	5.66	104	0.16	***	***
1	25	17.33	35.550	25.88	5.70	104	0.17	***	***
1	50	17.10	35.535	25.92	5.26	96	0.27	***	***
1	75	15.83	35.483	26.18	4.74	84	0.49	***	***
1	100	15.20	35.462	26.30	4.80	84	0.49	***	***
1	150	14.25	35.393	26.46	4.90	84	0.57	***	***
1	200	12.81	35.195	26.60	4.58	76	0.76	***	***
1	300	11.15	34.985	26.76	4.51	73	0.93	***	***
1	500	8.82	34.989*	27.16	4.54*	69	1.23	***	***
1	700	6.80	34.508	27.08	4.13	60	1.51	***	***
1	900	5.40	34.461	27.22	4.10	58	1.70	***	***
1	1100	4.27	34.497	27.38	3.81	52	1.84	***	***
1	1300	3.47	34.543	27.50	3.55	48	1.92	***	***
1	1500	2.97	34.596	27.59	3.47	46	2.00	***	***

* PROPERTY DOUBTFUL

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 255/64	21/ 9/64	0205 K	33 52 S	156 53 E					
SONIC AIR TEMP.	WIND	ANEM.	CLOUD	SEA	SWELL	ATMOS.	WIRE ANGLES		
DEPTH WET DRY	DIR. SP.	HEIGHT	TYPE	DIR. AMT.	DIR. AMT.	PRESSURE	CAST1 CAST2 CAST3		
4718 11.1 16.7	29 4	11	9 8	5 29 2	35 1	1013.7	5 * *		
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.13	35.586	25.71	5.22	97	0.20	***	***
1	25	18.09	35.589	25.72	5.18	96	0.23	***	***
1	58	17.75	35.566	25.78	5.20	96	0.25	***	***
1	75	17.40	35.559	25.86	4.95	91	0.34	***	***
1	100	16.29	35.474	26.06	4.34	78	0.55	***	***
1	150	15.19	35.394	26.25	4.35	76	0.64	***	***
1	200	14.53	35.349	26.36	4.40	76	0.68	***	***
1	300	12.28	35.114	26.64	4.39	72	0.89	***	***
1	500	9.09	34.715	26.90	4.34	67	1.28	***	***
1	700	7.31	34.542	27.04	4.23	62	1.53	***	***
1	900	5.63	34.477	27.21	4.06	58	1.77	***	***
1	1100	4.55	34.479	27.34	3.85	53	1.94	***	***
1	1300	3.69	34.526	27.46	3.60	49	2.03	***	***
1	1500	3.05	34.581	27.57	3.49	47	2.08	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 256/64	21/ 9/64	0648 K	34 31 S	156 35 E					
4682	17.8 10.6 32 2	11	8 6	5 * *					
SONIC AIR TEMP.	WIND DIR. SP.	ANEM. HEIGHT	CLOUD TYPE AMT.	SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1 CAST2 CAST3		
DEPTH MET	DIR. SP.	HEIGHT	TYPE AMT.	DIR. AMT.	DIR. AMT.	PRESSURE	CAST1 CAST2 CAST3		
4682	17.8 10.6 32 2	11	8 6	32 2	32 4	1012.5	5 * *		
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.71	35.516	25.76	5.35	99	0.17	***	***
1	25	17.47	35.566	25.85	5.34	98	0.21	***	***
1	50	17.10	35.553	25.93	5.36	98	0.23	***	***
1	75	16.85	35.546	25.99	5.33	97	0.24	***	***
1	100	16.12	35.504	26.12	4.73	85	0.46	***	***
1	150	15.35	35.480	26.28	4.88	86	0.49	***	***
1	200	14.74	35.411	26.36	4.72	82	0.57	***	***
1	300	12.40	35.135	26.64	4.40	73	0.87	***	***
1	500	9.39	34.754	26.88	4.58	71	1.20	***	***
1	700	7.36	34.544	27.03	4.27	63	1.52	***	***
1	900	5.74	34.473	27.19	4.16	59	1.76	***	***
1	1100	4.42	34.491	27.36	3.84	53	1.94	***	***
1	1300	3.54	34.546	27.49	3.54	48	2.03	***	***
1	1500	2.92	34.600	27.60	3.49	46	2.08	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE												
G 6/ 257/64	21/ 9/64	1300 K	34 21 S	155 29 E												
SONIC AIR TEMP.	WIND DIR.	SP.	ANEM. HEIGHT	CLOUD TYPE	AMT.	SIGMA-T	OXYGEN	SEA DIR.	AMT.	SWELL DIR.	AMT.	ATMOS. PRESSURE	CAST1	CAST2	CAST3	
4857	11.1	18.3	20	4	11	8	*	8	19	3	02	4	1013.0	0	*	*
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN %	SAT.	INORG. P	TOTAL P	NITRATE						
1	0	17.61	35.555	25.81	5.42	100		0.30	***	***						
1	25	17.47	35.555	25.85	5.34	98		0.25	***	***						
1	50	17.30	35.546	25.88	5.17	95		0.30	***	***						
1	75	15.56	35.382	26.16	4.32	76		0.62	***	***						
1	100	14.75	35.362	26.32	4.52	79		0.69	***	***						
1	150	13.43	35.246	26.51	4.42	75		0.75	***	***						
1	200	12.39	35.116	26.62	4.36	72		0.86	***	***						
1	300	11.63	35.112	26.77	4.72	77		0.83	***	***						
1	500	8.57	34.658	26.94	4.33	66		1.35	***	***						
1	700	6.92	34.518	27.07	4.26	62		1.58	***	***						
1	900	5.38	34.468	27.23	4.04	57		1.78	***	***						
1	1100	4.30	34.489	27.37	3.83	53		1.93	***	***						
1	1300	3.51	34.538	27.49	3.59	48		1.97	***	***						
1	1500	2.99	34.595	27.58	3.44	46		2.01	***	***						

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 258/64	21/ 9/64	1835 K	34 09 S	154 29 E					
SONIC AIR TEMP.	WIND DIR. SP.	ANEM. HEIGHT	CLOUD TYPE	AMT.	VIS. DIR. AMT.	SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1 CAST2 CAST3
4727	11.7 18.3 16 3	11	6 3	7 16 2 19 1	1014.0	5	*	*	
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	19.32	35.623	25.43	5.08	97	0.18	***	***
1	25	19.35	35.622	25.43	5.10	97	0.17	***	***
1	50	19.31	35.620	25.43	5.02	96	0.18	***	***
1	75	19.30	35.619	25.43	4.99	95	0.19	***	***
1	100	18.98	35.621	25.52	4.90	93	0.21	***	***
1	150	18.91	35.628	25.54	5.02	95	0.20	***	***
1	200	18.52	35.590	25.61	4.58	86	0.28	***	***
1	300	16.45	35.468	26.02	4.17	75	0.47	***	***
1	500	12.03	35.098	26.68	4.45	73	0.72	***	***
1	700	8.64	34.728	26.98	4.35	66	0.98	***	***
1	900	6.74	34.508	27.09	4.24	62	1.34	***	***
1	1100	5.35	34.470	27.24	4.07	57	1.54	***	***
1	1300	4.28	34.497	27.38	3.75	52	1.84	***	***
1	1500	3.43	34.553	27.51	3.50	47	1.95	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE																	
G 6/ 259/64	21/ 9/64	2325 K	34 07 S	153 36 E																	
SONIC AIR TEMP.	WIND DIR.	SP.	ANEM. HEIGHT	CLOUD TYPE	AMT.	VIS.	SEA DIR.	AMT.	SWELL DIR.	AMT.	ATMOS. PRESSURE	CAST1	CAST2	CAST3	WIRE ANGLES						
DEPTH	10.6	16.9	14	1	11	8	14	2	16	1	1011.0	10	10	*	*						
TEMP.	19.23	19.17	19.07	19.02	19.01	18.88	18.81	18.00	13.46	9.59	7.37	900	1100	1287	1485	1980	2474	2969	3464	3958	4453
DEPTH	0	25	50	75	100	150	200	300	500	700	900	1100	1287	1485	1980	2474	2969	3464	3958	4453	
SALINITY	35.626	35.626	35.625	35.625	35.626	35.621	35.606	35.562	35.209	34.767	34.548	34.474	34.486	34.966	34.645	34.714	34.769	34.730	34.726	34.724	
SIGMA-T	25.46	25.47	25.50	25.51	25.52	25.54	25.55	25.72	26.48	26.86	27.03	27.20	27.35	27.90	27.66	27.76	27.83	27.83	27.83	27.83	
OXYGEN	5.11	5.11	5.07	5.03	4.98	4.88	4.83	4.29	4.20	4.33	4.23	4.13	3.78	3.56	3.59	3.94	4.17	4.28	4.39	4.41	
OXYGEN % SAT.	97	97	96	95	94	92	91	80	71	67	62	59	52	48	47	51	54	55	56	56	
INORG. P	0.19	0.19	0.22	0.22	0.25	0.27	0.31	0.48	0.85	1.23	1.55	1.80	1.93	2.09	2.11	2.01	1.98	2.00	1.98	2.01	
TOTAL P	0.35	**	0.38	**	0.38	**	0.44	0.61	0.95	1.39	1.64	1.89	2.03	2.10	2.22	2.07	1.85	2.10	2.01	2.76	
NITRATE	0.1	0.0	0.0	0.0	0.0	0.4	0.0	0.0	**	0.7	26.5	30.8	35.4	35.8	36.5	35.8	26.2	31.5	32.9	33.7	

STATION G 6/ 260/64 DATE 22/ 9/64 TIME 0600 K LATITUDE 33 58 S LONGITUDE 152 52 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 DIR. SP. HEIGHT

4718 11.1 17.8 05 4 11 8 3 7 04 2 17 1 1013.0 0 * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	***	35.519	***	***	***	***	***	***
1	188	17.48	35.547	25.84	***	***	***	***	***
1	376	13.30	35.178	26.49	***	***	***	***	***
1	564	9.60	34.770	26.86	***	***	***	***	***
1	752	7.26	34.543	27.04	***	***	***	***	***
1	939	5.83	34.475	27.18	***	***	***	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE		
G 6/ 262/64	22/ 9/64	1200 K	33 51 S	152 00 E		
SONIC AIR TEMP.	WIND DIR. SP.	WIND DIR. SP.	SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1 CAST2 CAST3
DEPTH WET DRY	22.2 25 4	11 8 1	8 26 2 24 1	1012.6	* * *	* * *
1646 11.7	22.2 25 4	11 8 1	8 26 2 24 1	1012.6	* * *	* * *
CLOUD AMT.	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
ANEM. HEIGHT	SALINITY	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
TYPE	TYPE	DIR. AMT.	DIR. AMT.	PRESSURE	CAST1 CAST2 CAST3	
AMT.	AMT.	AMT.	AMT.	AMT.	AMT.	AMT.
1	25.60	5.28	99	0.18	***	***
1	25.78	5.08	94	0.25	***	***
1	25.91	4.26	77	0.57	***	***
1	26.09	4.14	74	0.67	***	***
1	26.43	4.17	71	0.80	***	***
1	26.55	4.31	72	0.85	***	***
1	26.67	4.77	79	0.77	***	***
1	26.79	4.91	80	0.81	***	***
1	26.93	4.80	74	1.17	***	***
2	27.03	4.28	63	1.53	***	***
2	27.21	4.11	58	1.78	***	***
2	27.37	3.81	52	1.96	***	***
2	27.51	3.53	48	2.06	***	***
2	27.60	3.43	46	2.11	***	***

STATION		DATE		TIME		LATITUDE		LONGITUDE	
G 6/ 263/64		22/ 9/64		1937 K		34 56 S		151 24 E	
SONIC AIR TEMP. WIND		ANEM.		VIS. SEA		SWELL		ATMOS.	
DEPTH WET DRY DIR. SP.		HEIGHT TYPE AMT.		DIR. AMT.		DIR. AMT.		PRESSURE CAST1 CAST2 CAST3	
1682	7.2 15.6 27 8	11	* *	8	25 4	25 4	1014.2	5	5 5
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.21	35.589	25.93	5.49	100	0.18	***	***
1	25	16.54	35.560	26.07	5.62	101	0.18	***	***
1	50	15.83	35.533	26.21	5.42	96	0.28	***	***
1	75	15.59	35.518	26.26	5.32	94	0.33	***	***
1	100	14.49	35.431	26.43	4.96	86	0.56	***	***
1	150	13.89	35.400	26.54	5.05	86	0.58	***	***
1	200	13.01	35.275	26.62	4.86	81	0.71	***	***
2	300	12.03	35.334	26.86	4.91	81	0.67	***	***
2	500	8.86	34.727	26.95	4.57	70	1.22	***	***
3	700	7.14	34.532	27.05	4.25	62	1.56	***	***
3	900	5.42	34.468	27.23	4.02	57	1.81	***	***
3	1100	4.30	34.494	27.37	3.72	51	1.97	***	***
3	1300	3.47	34.547	27.50	3.51	47	2.09	***	***
3	1500	2.90	34.599	27.60	3.45	46	2.11	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/264/64	24/9/64	0137 K	35 05 S	192 20 E					
SONIC AIR TEMP.	WIND DIR, SP.	CLOUD AMT.	SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1 CAST2 CAST3			
DEPTH WET DRY	9.4 16.4 26 7 11 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	4718	9.4 16.4 26 7 11 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1015.0	10 10 10 *				
CASE	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN X SAT.	INORG. P	TOTAL P	NITRATE
1	0	20.03	35.959	25.20	***	***	***	***	***
1	25	20.04	35.961	25.20	***	***	***	***	***
1	50	19.01	35.953	25.46	***	***	***	***	***
1	75	17.96	35.921	25.70	***	***	***	***	***
1	100	16.75	35.470	25.95	***	***	***	***	***
1	150	15.33	35.370	26.20	***	***	***	***	***
1	200	13.54	35.216	26.47	***	***	***	***	***
2	300	11.97	35.009	26.70	***	***	***	***	***
2	500	9.56	34.809	26.90	***	***	***	***	***
2	700	7.02	34.521	27.06	***	***	***	***	***
2	900	5.46	34.466	27.22	***	***	***	***	***
2	1100	4.40	34.565	27.42	***	***	***	***	***
2	1300	3.55	34.533	27.48	***	***	***	***	***
2	1500	2.97	34.588	27.58	***	***	***	***	***

STATION G 6/ 265/64 DATE 24/ 9/64 TIME 0700 K LATITUDE 35 14 S LONGITUDE 153 15 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

4709 9.4 17.8 24 4 11 8 1 8 24 2 25 4 1017.0 10 * *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.01	35.602	25.75	5.05	94	0.29	***	***
1	25	18.01	35.603	25.75	5.02	93	0.28	***	***
1	49	17.94	35.589	25.75	4.98	92	0.31	***	***
1	72	17.41	35.545	25.85	4.57	84	0.40	***	***
1	96	17.16	35.527	25.90	4.42	81	0.46	***	***
1	144	16.28	35.519	26.10	5.24	94	0.36	***	***
1	192	14.46	35.405	26.42	4.84	84	0.64	***	***
1	287	13.51	35.346	26.57	4.98	84	0.64	***	***
1	474	9.96	***	***	4.28	***	1.05	***	***
1	660	8.04	34.642	27.01	4.45	67	1.44	***	***
1	827	6.44	***	***	4.35	***	1.40	***	***
1	993	4.91	34.488	27.30	4.01	56	1.86	***	***
1	1158	3.69	34.528	27.46	3.60	49	2.12	***	***
1	1320	3.20	34.605	27.57	3.54	47	2.15	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE										
G 6/ 266/64	24/ 9/64	1200 K	35 28 S	154 16 E										
SONIC AIR TEMP.	WIND DIR. SP.	WIND DIR. SP.	SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1 CAST2 CAST3								
DEPTH WET	DRY	20.0	23	5	11	8	3	3	24	4	1017.5	10	10	*
4810	11.7	20.0	23	5	11	8	3	3	24	4	1017.5	10	10	*
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE					
1	0	16.65	35.561	26.05	5.59	101	0.31	***	***					
1	25	16.41	35.563	26.10	5.51	99	0.37	***	***					
1	50	15.83	35.553	26.23	5.47	97	0.33	***	***					
1	75	15.62	35.527	26.26	5.26	93	0.40	***	***					
1	100	14.80	35.464	26.39	5.14	90	0.49	***	***					
1	150	14.20	35.442	26.50	5.06	87	0.56	***	***					
1	200	13.20	35.314	26.61	4.86	82	0.72	***	***					
2	300	11.24	35.020	26.77	4.60	74	0.96	***	***					
2	500	8.86	34.690	26.92	4.57	70	1.10	***	***					
2	700	7.02	34.521	27.06	4.25	62	1.60	***	***					
2	900	5.65	34.467	27.20	4.11	58	1.77	***	***					
2	1100	4.87	34.481	27.33	3.87	54	1.96	***	***					
2	1300	3.66	34.534	27.47	3.54	48	2.06	***	***					
2	1500	3.07	34.583	27.57	3.45	46	2.16	***	***					

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/269/64	24/9/64	1912 K	34 31 S	154 03 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.	DIR. AMT.	PRESSURE	CAST1 CAST2 CAST3				
4737 17.2 10.6 18 2	11 * *	8 18 2	21 1	1019.5	5 5 *				
CST	DEPTH	TRMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	20.02	35.576	25.21	5.11	99	0.18	***	***
2	25	19.87	35.573	25.25	5.11	98	0.18	***	***
2	50	19.55	35.605	25.36	5.11	98	0.18	***	***
2	75	19.29	35.624	25.44	5.02	96	0.21	***	***
2	100	19.18	35.623	25.47	5.01	95	0.24	***	***
2	150	18.80	35.607	25.56	4.86	92	0.30	***	***
2	200	18.46	35.579	25.62	4.38	82	0.44	***	***
1	300	16.86	35.512	25.96	4.39	80	0.55	***	***
1	500	11.98	35.033	26.64	4.35	71	0.92	***	***
1	700	8.98	34.691	26.90	4.39	67	1.27	***	***
1	900	6.84	34.511	27.08	4.27	62	1.58	***	***
1	1100	5.28	34.470	27.24	4.11	58	1.83	***	***
1	1300	4.32	34.491	27.37	3.77	52	1.95	***	***
1	1500	3.66	34.538	27.48	3.56	48	2.08	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 272/64	25/ 9/64	0315 K	33 51 S	154 45 E					
SONIC AIR TEMP.	WIND DIR.	WIND DIR.	SEA DIR.	SWELL DIR.	ATMOS. PRESSURE	WIRE ANGLES			
DEPTH WET	DRY	SP.	AMT.	AMT.	CAST1	CAST2	CAST3		
4727	10.0	16.1	00 1	11 8 1	8 0 0	19 4	1018.0	12 20 *	
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	19.48	35.613	25.38	5.15	99	0.19	***	***
2	25	19.50	35.613	25.38	5.11	98	0.18	***	***
2	50	19.48	35.613	25.38	5.10	98	0.21	***	***
2	75	19.29	35.624	25.44	4.98	95	0.23	***	***
2	100	19.11	35.632	25.49	5.05	96	0.24	***	***
2	150	18.34	35.583	25.65	4.47	84	0.42	***	***
2	200	16.83	35.483	25.94	4.17	76	0.60	***	***
2	300	14.47	35.443	26.45	5.14	89	0.53	***	***
1	467	11.27	35.028	26.77	4.65	75	0.93	***	***
1	654	8.32	34.627	26.95	4.37	66	1.38	***	***
1	841	6.78	34.507	27.08	4.29	62	1.57	***	***
1	1027	5.41	34.466	27.23	4.10	58	1.72	***	***
1	1214	4.42	34.489	27.36	3.84	53	1.90	***	***
1	1401	3.65	34.540	27.48	3.62	49	2.03	***	***

STATION G 6/ 276/64
 DATE 25/ 9/64
 TIME 0925 K
 LATITUDE 33 36 S
 LONGITUDE 155 25 E

SONIC DEPTH	AIR TEMP. WET	WIND DIR. SP.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	SEA DIR. AMT.	SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	WIRE ANGLES CAST2	WIRE ANGLES CAST3
4755	16.1	18.3	03	2	11	8	2	19	1	1020.5	10	*
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE			
1	0	17.57	35.552	25.82	5.44	100	0.24	***	***			
1	25	17.37	35.550	25.87	5.41	99	0.22	***	***			
1	50	17.36	35.544	25.86	5.33	98	0.26	***	***			
1	75	15.41	35.429	26.23	4.66	82	0.54	***	***			
1	100	14.82	35.405	26.34	4.77	83	0.59	***	***			
1	150	13.12	35.199	26.54	4.40	74	0.82	***	***			
1	200	11.95	35.070	26.67	4.36	71	0.92	***	***			
1	300	10.59	34.932	26.82	4.47	71	1.03	***	***			
1	500	8.40	34.634	26.95	4.33	65	1.37	***	***			
1	700	6.62	34.502	27.10	4.24	62	1.65	***	***			
1	900	5.24	34.468	27.25	3.98	56	1.82	***	***			
1	1100	4.22	34.493	27.38	3.78	52	1.95	***	***			
1	1300	3.51	34.543	27.49	3.47	47	2.08	***	***			
1	1500	2.99	34.588	27.58	3.46	46	2.03	***	***			

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 280/64	25/ 9/64	1415 K	33 30 S	154 37 E					
SONIC AIR TEMP.	WIND	ANEM.	CLOUD	SEA	ATMOS.	WIRE ANGLES			
DEPTH WET DRY	DIR. SP.	HEIGHT	TYPE	DIR. AMT.	DIR. AMT.	PRESSURE			
4687 14.4 19.4	01 4	11 5 6	5 6	7 01 3	20 1	1016.0			
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	19.52	35.617	25.38	5.10	98	0.19	***	***
1	25	19.42	35.605	25.39	5.06	97	0.23	***	***
1	50	19.42	35.607	25.39	5.03	96	0.20	***	***
1	75	19.39	35.607	25.40	5.03	96	0.20	***	***
1	100	19.30	35.607	25.43	4.94	94	0.24	***	***
1	150	18.73	35.612	25.58	4.82	91	0.29	***	***
1	200	18.08	35.569	25.71	4.34	81	0.48	***	***
1	300	15.71	35.399	26.14	4.10	73	0.68	***	***
2	500	11.73	35.029	26.68	4.31	70	0.98	***	***
2	700	8.62	34.657	26.93	4.31	65	1.33	***	***
2	900	6.69	34.500	27.09	4.19	61	1.63	***	***
2	1100	5.38	34.465	27.23	4.04	57	1.83	***	***
2	1300	4.17	34.510	27.40	3.67	50	1.95	***	***
2	1500	3.33	34.559	27.52	3.44	46	2.11	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 281/64	25/ 9/64	1930 K	33 30 S	153 42 E					
SONIC AIR TEMP.	WIND DIR. SP.	WIND DIR. SP.	WIRE ANGLES						
DEPTH WET DRY	ANEM. HEIGHT	CLOUD TYPE AMT.	VIS. DIR. AMT.	SEA DIR. AMT.					
4656 11.1 15.0	35 5 11	4 8	7 35 3	20 1 1015.0					
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	22.12	35.445	24.54	4.64	93	0.17	***	***
1	25	22.08	35.444	24.55	4.79	96	0.17	***	***
1	50	22.10	35.445	24.55	4.80	96	0.17	***	***
1	75	22.07	35.550	24.63	4.76	96	0.17	***	***
1	100	20.91	35.567	24.97	3.99	78	0.39	***	***
1	150	20.14	35.609	25.21	4.64	90	0.26	***	***
1	200	19.29	35.592	25.42	4.14	79	0.40	***	***
1	300	17.96	35.547	25.72	3.83	71	0.57	***	***
1	500	13.06	35.154	26.52	4.22	71	0.86	***	***
2	700	9.70	34.777	26.85	4.27	66	1.22	***	***
2	900	7.07	34.522	27.05	4.24	62	1.56	***	***
2	1100	5.57	34.469	27.21	4.07	58	1.78	***	***
2	1300	4.49	34.487	27.35	3.79	52	1.96	***	***
2	1500	3.71	34.533	27.47	3.50	47	2.04	***	***

STATION		DATE		TIME		LATITUDE		LONGITUDE	
G 6/ 282/64		25/ 9/64		2220 K		33 29 S		153 16 E	
SONIC AIR TEMP.	WIND DIR, SP.	ANEM. HEIGHT	CLOUD TYPE	AMT.	SEA DIR. AMT.	SWELL DIR. AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	WIRE ANGLES CAST2
4682	16.1 20.6 23 4	11	6 4		7 23 2	18 1	1016.5	20	10
									*
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	21.95	35.471	24.61	4.79	96	0.17	***	***
2	25	21.95	35.467	24.61	4.80	96	0.19	***	***
2	50	22.00	35.467	24.59	4.79	96	0.19	***	***
2	75	21.95	35.466	24.60	4.74	95	0.20	***	***
2	100	21.93	35.469	24.61	4.67	94	0.20	***	***
2	150	21.23	35.500	24.83	4.71	93	0.23	***	***
2	200	18.42	35.520	25.58	3.85	72	0.54	***	***
2	300	15.22	35.335	26.20	4.02	71	0.73	***	***
1	480	12.04	35.055	26.64	4.27	70	0.94	***	***
1	672	9.01	34.585	26.81	4.40	67	***	***	***
1	864	7.21	34.530	27.04	4.24	62	1.53	***	***
1	1056	5.76	34.472	27.19	4.10	58	1.77	***	***
1	1249	4.71	34.478	27.32	3.87	54	1.82	***	***
1	1441	3.64	34.523	27.45	3.60	49	1.98	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE					
G 6/ 283/64	26/ 9/64	0340 K	33 22 S	152 21 E					
SONIC AIR TEMP.	WIND DIR.	SP. DIR.	SEA DIR.	AMT. DIR.	SWELL DIR.	AMT. DIR.	ATMOS. PRESSURE	WIRE ANGLES	
DEPTH WET DRY	19 5	11	8 5	7 19 3	20 1	1018.0	CAST1 CAST2 CAST3	* *	
2085	13.9 18.9	19 5	11	8 5	7 19 3	20 1	1018.0	10 * *	
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	20.57	35.516	25.02	4.90	96	0.19	***	***
1	25	20.56	35.517	25.03	4.84	94	0.18	***	***
1	50	20.06	35.573	25.20	4.81	93	0.23	***	***
1	75	18.84	35.614	25.55	4.79	91	0.29	***	***
1	100	18.57	35.605	25.61	4.76	89	0.31	***	***
1	150	17.21	35.511	25.87	3.99	73	0.52	***	***
1	200	15.26	35.359	26.21	4.04	71	0.73	***	***
1	300	11.90	35.075	26.68	4.36	71	0.96	***	***
1	500	10.49	35.009	26.89	4.85	77	0.96	***	***
1	700	7.75	34.576	27.00	4.22	63	1.40	***	***
1	900	6.16	34.481	27.14	4.10	59	1.76	***	***
1	1100	4.66	34.480	27.32	3.85	53	1.97	***	***
1	1300	3.62	34.536	27.48	3.48	47	2.06	***	***

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.

OCEANOGRAPHICAL CRUISE REPORTS

(Continued)

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.
35. Oceanographical observations in the Indian and Pacific Oceans in 1964. H.M.A.S. *Gascoyne* Cruise G3/64.
36. Oceanographical observations in the Indian Ocean in 1964. H.M.A.S. *Diamantina* Cruise Dm2/64.
39. Oceanographical observations in the Pacific Ocean in 1964. H.M.A.S. *Gascoyne* Cruise G4/64.
42. Oceanographical observations in the Pacific Ocean in 1964. H.M.A.S. *Gascoyne* Cruise G6/64.
46. Oceanographical observations in the Indian Ocean in 1965. H.M.A.S. *Gascoyne* Cruise G5/65.