OCEANOGRAPHICAL OBSERVATIONS
IN THE INDIAN OCEAN IN 1965
H.M.A.S. *DIAMANTINA*
Cruise Dm2/65

OCEANOGRAPHICAL CRUISE REPORT NO. 49

DIVISION OF FISHERIES AND OCEANOGRAPHY
COMMONWEALTH SCIENTIFIC AND INDUSTRIAL
RESEARCH ORGANIZATION, AUSTRALIA 1969

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AUSTRALIA

MELBOURNE, 1969

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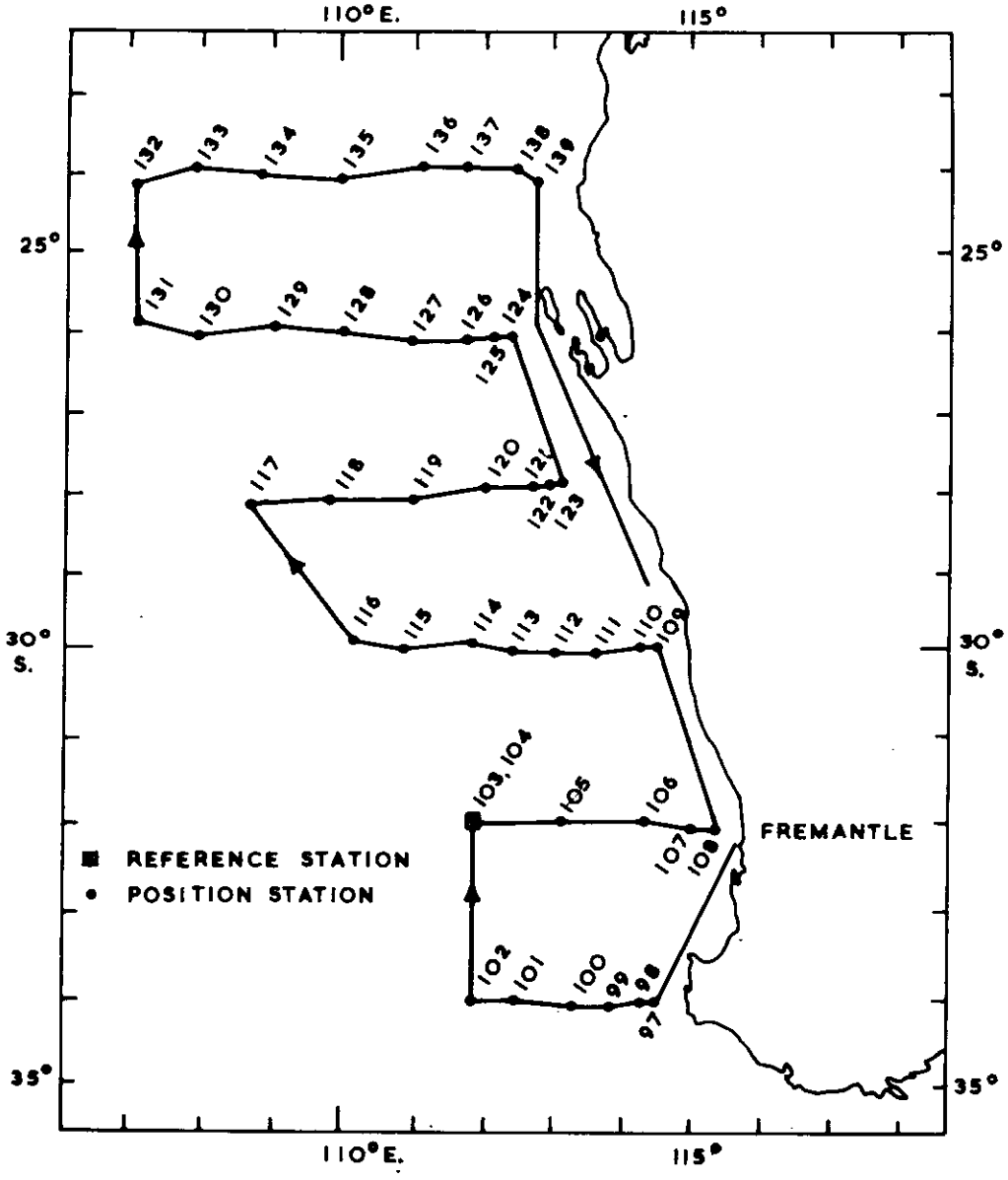

Fig. 1. Track chart Cruise Dm. 2/65

OCEANOGRAPHICAL CRUISE REPORT

No. 49

Oceanographical Observations in the Indian Ocean in 1965

H.M.A.S. Diamantina

Cruise Dm 2/65

July 17-29, 1965

I. INTRODUCTION

This report records the data collected during the second cruise in 1965 of H.M.A.S. Diamantina, Royal Australian Navy oceanographical frigate.

Objectives

To study the distribution and growth of the larval stages of the western crayfish (Panulirus longipes cygnus).

To examine the hydrological conditions and circulation of water masses off the Western Australian coast.

Itinerary

The cruise began at Fremantle on July 17, worked a series of east-west sections off the Western Australian coast, and ended at Fremantle on July 29 (Fig. 1).

Scientific Personnel

R.G. Chittleborough (Cruise Leader)
N. Dyson
J. Prothero
L.R. Thomas

Water samples were collected, and salinity, oxygen, phosphate and total phosphorus analyses were done in the ship's laboratory by N. Dyson and J. Prothero. Nitrate analyses were done at Cronulla by J. Klye. Zooplankton and midwater trawl samples were collected by R.G. Chittleborough and L.R. Thomas, and examined for crayfish larvae by R.G. Chittleborough.

The data were processed under the direction of W. Hedge, using computer programmes designed by A.D. Crooks. The track chart was prepared for publication by R. Breach.

II. WORK ACCOMPLISHED

Forty-three stations were worked (Dm2/97/65-Dm2/139/65). Surface and subsurface hydrology samples were collected at 34 stations. Zooplankton samples were collected at 15 stations, and micronekton at 16 stations.

TABLE 1

WORK DONE AT EACH STATION

Stn No.	Hydrology Surface to Depth (m)	Micronekton 1	Micronekton 2	Zooplankton
97	175			
98			+	+
99	1500			
100	1500			
101			+	
102	1500			
103	4500			
104		+	+	+
105	1500			
106	1500			
107			+	+
108	175			
109	175			
110			+	+
111	1500			
112	1500			
113		+	+	+
114	1500			
115	1500			
116	1500	+	+	+
117	1500	+	+	+
118	1500	+	+	+
119	1500			
120	1500			
121	1500			
122			+	+
123	175			
124	175			
125			+	+
126	800			
127	1500			
128	1500	+	+	+

Stn No.	Hydrology Surface to Depth (m)	Micronekton 1	Micronekton 2	Zooplankton
129	1500			
130	1500			
131	1500	+	+	+
132	1500	+	+	+
133	1500			
134	1500			
135	1500	+	+	+
136	1500			
137	1500			
138		+	+	+
139	175			

Micronekton 1 Horizontal tow at 200 m
2 Oblique tow 200-0 m

III. METHODS 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. Temperatures are considered accurate to ±0.03 degC.

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% at depths less than 1000 m.

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) -

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

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 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 with no correction for salt error and are precise to ±10% for values less than 0.5 µg-atom/l and ±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% 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 phenolpthalein 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 µg-atom/l with no correction for salt error. To correct for salt effects the results given should be multiplied by 1.15.

Nitrate.—After collection, water samples were stored in 50 ml

plastic bottles and preserved with 0.5 ml of saturated $HgCl_2$. Nitrate was determined at Cronulla by the strychnidine method (Rochford 1947). The reagent was prepared by adding 0.64 g of strychnidine to a litre of nitrate-free sulphuric acid. Five ml of this reagent were added, without agitation, to 5 ml sea-water or standard nitrate solution previously cooled to approx. 5°C. The standards were made up in artificial sea-water preserved with 10 ml/l of saturated $HgCl_2$. The standards and samples were allowed to stand undisturbed for 18 hr to develop the colour. The solutions were read in a Unicam SP 600 spectrophotometer at a wavelength of 530 nm using a 5 mm cell. Solutions with an absorbance greater than that of the standard corresponding to 7.1 µg-atom/l were diluted with a mixture of equal volumes of artificial sea-water and sulphuric acid before reading. Results are given in µg-atom/l.

3. Zooplankton

An N70 plankton net was towed parallel to the vessel, from a boom mounted in the foreward part of the vessel. A weight attached to the wire 20 ft ahead of the net ensured that the mouth of the net did not break out of the water surface. Depth of operation of the plankton net varied with sea conditions, the net fishing in the upper 5 m of the sea. After 30 min of fishing, the net was drawn to the side of the vessel by a lazy line attached to the bridle, the contents washed down to the bucket using a salt-water hose, then the bucket replaced and the net released to take a second haul of 30 min duration. The ship's speed was maintained at $2\frac{1}{2}$–3 kt throughout these operations. No flowmeter was used.

Samples were concentrated in the ship's laboratory, and stored in neutralized 10% formalin in plastic bottles, and examined for crayfish larvae at Perth.

4. Micronekton

Oblique Tows 200–0 m.—Oblique tows were made through the upper 200 m with a 5-ft Isaacs-Kidd midwater trawl, a scaled-down version of the 6-ft trawl (King and Iversen 1962; Aron 1960).

No flowmeter was used. The trawl was fitted with a depth recorder (Hamon, Tranter, and Heron 1963) and lowered from the stern while the ship's speed was 2 kt. When the trawl was clear of the ship, speed was increased to 5 kt and the wire was paid out at 40–50 m/min under a constant and minimum tension. After 600 m of wire had been paid out the ship's speed was reduced to

3 kt and further adjusted according to the reading of a tension gauge. A final 100 m was then paid out making the total 700 m. After 5 min the wire was retrieved at a winch speed of 9 m/min. Tows were made at approximately 2200 h. The paying-out period averaged 15 min and the retrieval period 80 m.

Horizontal Tows 200 m.—Horizontal tows were made at approx. 200 m for 1 hr with a 5-ft Isaacs-Kidd midwater trawl.

A depth recorder was attached to the bridle of the trawl. The net was streamed astern while the ship's speed was $2\frac{1}{2}$-3 kt. Speed was then increased to 5 kt and the net lowered as rapidly as possible, winch speed being regulated to avoid over-running the wire. After approx. 500 m of wire had been paid out, ship's speed was reduced to $2\frac{1}{2}$-3 kt. The winch was stopped when 600 m of wire had been paid out. After towing the trawl for 55 min at $2\frac{1}{2}$-3 kt, a messenger was dropped to release the upper bridle of the midwater trawl, and after a further 5 min the net was winched aboard.

Collection of Samples.—The net was washed from outside into the bucket which was then removed from the net. The net was checked for organisms caught in the meshes (e.g. leptocephali); these were removed. Samples were stored in neutralized 10% formalin, in plastic bottles; larger organisms were stored separately. At Perth, samples were examined for crayfish larvae.

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IV. DATA

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

DATA

PART 1

HYDROLOGY

SURFACE SAMPLES

EXPLANATION OF HEADINGS

Parts 1 and 2	Hydrology
STATION	Gives the station identification. For example, Dm2/97/65 signifies the 97th station worked by Diamantina in 1965, on her 2nd 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. The code letter for the time zone follows the time. Zone Time throughout the cruise was Western Australian Standard Time, GMT +8 hr, Code H
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. Navy Hydrogr. Office (1955)
ANEM. HEIGHT	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. Navy Hydrogr. Office (1955)
WEA.	Weather is coded using Table 1 in U.S. Navy Hydrogr. Office (1955)
VIS.	Visibility is coded using Table 4 in U.S. Navy Hydrogr. Office (1955)
SEA DIR. AMT.	Sea direction and amount are coded using Tables 5 and 8 in U.S. Navy Hydrogr. Office (1955)

SWELL DIR. AMT.	Sea swell direction and amount are coded using Tables 6 and 8 in U.S. Navy Hydrogr. Office (1955)
BAROM. or ATMOS. PRESSURE	Atmospheric pressure given in millibars
WIRE ANGLES CAST1 CAST2 CAST3	Wire angles are measured at the surface and expressed in degrees for each cast
CAST	Gives the cast number
DEPTH	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	Inorganic phosphorus given in µg-atom P/l
TOTAL P	Total phosphorus given in µg-atom P/l
NITRATE	Given in µg-atom N/l

*, ***, or a blank indicate no data available

CRUISE	STATION NUMBER	YR.	MTH.	DAY	TIME	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND DN.	WIND AMT.	SEA DN.	SEA AMT.	SWELL DN.	SWELL AMT.	WEA.	VIS.	BAROM.
2	97	65	7	18	0025	H 34 00	S 114 27	E 19,7	35,66	34	6	34	3	34	2	17	7	1000.3
2	98	65	7	18		34 00	S 114 25	E		34	6	34	3	34	2	17	7	1000.3
2	99	65	7	18	0630	H 34 05	S 113 50	E 18,6	35,69	31	5	32	1	34	3	14	5	1035.0
2	100	65	7	18	1000	H 34 05	S 113 20	E 17,3	35,64	31	5	33	2	33	1	12	6	975.0
2	101	65	7	18	1625	H 34 00	S 112 30	E		30	6	30	3	32	4	10	6	1006.5
2	102	65	7	18	1900	H 34 00	S 111 50	E 16,1	35,71	31	6	30	3	32	4	07	6	956.5
2	103	65	7	19	1400	H 32 00	S 111 50	E 19,5	35,67	20	5	20	3	20	4	23	7	1030.3
2	104	65	7	19	1645	H 32 00	S 111 50	E		20	3	20	3	20	5	19	7	970.2
2	105	65	7	20	0045	H 31 59	S 113 14	E 18,2	35,77	20	1	20	1	21	2	19	7	960.2
2	106	65	7	20	0700	H 31 59	S 114 25	E 19,4	35,65	18	2	19	2	20	2	19	7	980.2
2	107	65	7	20	1030	H 32 03	S 115 00	E		21	4	21	3	22	2	26	7	1000.2
2	108	65	7	20	1250	H 32 04	S 115 19	E 20,9	35,43	19	2	21	2	21	1	26	7	1000.2
2	109	65	7	20	2230	H 30 00	S 114 30	E 22,0	35,35	18	2	18	1	18	1	20	7	1040.0
2	110	65	7	20	2310	H 30 00	S 114 24	E		18	2	18	1	18	1	20	7	1040.0
2	111	65	7	21	0330	H 30 01	S 113 39	E 22,2	35,30	21	3	18	1	18	2	19	7	1010.3
2	112	65	7	21	0715	H 30 00	S 113 01	E 20,7	35,47	21	4	21	2	22	3	26	7	1010.1
2	113	65	7	21	1025	H 30 00	S 112 25	E		24	2	21	2	22	1	22	8	1000.2
2	114	65	7	21	1505	H 29 57	S 111 50	E 21,7	35,37	21	3	21	1	22	3	21	7	990.1
2	115	65	7	21	2000	H 30 00	S 110 50	E 19,3	35,72	20	4	20	3	21	2	24	7	990.0
2	116	65	7	21	2325	H 29 57	S 110 10	E 18,1	35,88	20	4	20	3	21	2	25	7	1020.0
2	117	65	7	22	1450	H 28 04	S 108 38	E 18,6	35,75	15	4	15	3	14	3	23	7	1000.1
2	118	65	7	22	2210	H 28 03	S 109 55	E 20,7	35,50	14	5	14	3	17	3	25	7	1020.0
2	119	65	7	23	0745	H 28 03	S 111 00	E 20,6	35,51	11	4	11	3	18	1	24	7	1020.3
2	120	65	7	23	1250	H 27 56	S 112 00	E 19,7	35,60	11	3	11	3	18	1	23	8	1000.1
2	121	65	7	23	1700	H 27 55	S 112 45	E 21,2	35,40	12	4	14	3	15	1	23	7	1000.3
2	122	65	7	23	1920	H 27 53	S 113 00	E		12	4	14	3	16	2	22	6	980.2
2	123	65	7	23	2200	H 27 53	S 113 09	E 22,9	35,25	12	4	12	3	15	2	23	7	970.0
2	124	65	7	24	0745	H 26 00	S 112 20	E 22,8	35,24	15	4	14	2	15	3	22	8	960.2
2	125	65	7	23	0840	H 26 02	S 112 13	E		14	4	14	3	16	2	22	7	980.2
2	126	65	7	24	1200	H 26 03	S 111 50	E 20,3	35,55	14	4	14	2	15	2	23	7	1030.2
2	127	65	7	24	1530	H 26 01	S 111 00	E 21,0	35,51	14	3	14	1	15	3	21	8	990.2
2	128	65	7	24	2207	H 26 00	S 110 00	E 22,2	35,32	14	5	14	3	15	2	23	7	1000.0
2	129	65	7	25	0430	H 25 57	S 109 00	E 21,0	35,53	12	4	12	3	13	3	22	6	1010.1
2	130	65	7	25	0930	H 26 00	S 108 00	E 20,5	35,62	17	6	17	3	15	2	22	6	990.3
2	131	65	7	25	1510	H 25 52	S 107 10	E 20,8	35,54	14	7	14	6	17	6	21	6	990.3
2	132	65	7	26	0100	H 24 06	S 107 03	E 21,9	35,24	11	6	12	4	13	4	20	6	1005.0
2	133	65	7	26	0925	H 23 58	S 107 59	E 22,9	35,17	12	6	12	4	13	5	21	7	1020.3
2	134	65	7	26	1430	H 24 00	S 108 56	E 23,4	35,20	11	5	12	3	12	1	19	7	960.1
2	135	65	7	26	1950	H 24 02	S 110 00	E 23,1	35,22	11	6	11	5	13	4	21	7	1020.1
2	136	65	7	27	0445	H 23 57	S 111 03	E 22,1	35,28	11	3	11	3	13	1	16	7	1040.2

CRUISE	STATION NUMBER	YR.	MTH.	DAY	TIME	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND DN.	WIND AMT.	SEA DN.	SEA AMT.	SWELL DN.	SWELL AMT.	WEA.	VIS.	BAROM.
2	137	65	7	27	0905	H 23 58 S	111 50 E	22.2	35.27	11	2	11	1	13	3	26	9	960.2
2	138	65	7	27	1305	H 23 59 S	112 30 E			06	2	15	2	18	5	20	8	1040.2
2	139	65	7	27	1545	H 24 02 S	112 50 E	23.9	35.19	11	2	13	2	13	3	20	8	980.2

DATA

PART 2

HYDROLOGY

DEEP STATIONS

STATION	DATE	TIME	LATITUDE	LONGITUDE
DF 2/ 97/65	18/ 7/65	0025 H	34 00 S	114 27 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
183	16,3	16,7	34	6	25	1	6	7	34	3	34	2	1017,0	25	*	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
1	0	19,71	35,659	25,36	4,99	96	0,12	***	0.3
1	9	19,72	35,659	25,36	4,96	95	0,16	***	0.3
1	19	19,71	35,661	25,36	4,96	95	0,11	***	0,2
1	28	19,73	35,661	25,36	4,96	95	0,11	***	0,2
1	38	19,72	35,661	25,36	4,96	95	0,12	***	0,2
1	47	19,72	35,661	25,36	4,96	95	0,09	***	0,1
1	70	19,71	35,662	25,36	4,96	95	0,15	***	0,1
1	94	19,68	35,663	25,37	4,96	95	0,15	***	0,0
1	117	19,28	35,730	25,53	4,86	93	0,16	***	0,2
1	141	18,09	35,766	25,86	4,96	92	0,16	***	0,4
1	164	17,50	35,766	26,00	5,06	93	0,19	***	0.4

STATION	DATE	TIME	LATITUDE	LONGITUDE
DUM 2/ 99/65	18/ 7/65	0630 H	34 05 S	113 50 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
1920	16,7	18,3	31	5	25	8	9	5	32	1	34	3	1014,3	10	5	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	18,61	35,688	25,67	5,09	96	0,14	***	0,1
2	25	18,61	35,689	25,67	5,09	96	0,17	***	***
2	50	18,24	35,703	25,77	5,15	96	0,21	***	0,2
2	75	16,93	35,753	26,13	5,30	97	0,20	***	0,0
2	100	16,59	35,754	26,21	5,27	95	0,20	***	0,1
2	150	14,50	35,506	26,49	5,15	89	0,36	***	2,2
2	200	13,05	35,316	26,64	5,30	89	0,46	***	3,6
1	300	10,43	34,895	26,81	5,50	87	0,74	***	10,0
1	500	8,76	34,640	26,90	5,36	82	1,01	***	15,8
1	700	6,64	34,464	27,07	4,53	66	1,49	***	24,7
1	900	4,21	34,381	27,29	4,39	60	1,80	***	28,6
1	1100	3,46	34,494	27,46	3,71	50	1,98	***	30,0
1	1300	3,12	34,555	27,54	3,50	47	1,98	***	30,4
1	1500	2,81	34,608	27,61	3,53	47	2,00	***	32,9

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 100/65	18/ 7/65	1000 H	34 05 S	113 20 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
2926	17,2	18,9	31	5	25	8	8	6	33	2	33	1	1012,7	5	5	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	17,31	35,644	25,95	5,33	98	0,15	***	0,3
2	25	17;41	35,718	25,98	5,24	96	0,14	***	0,2
2	50	17;10	35,730	26,07	5,27	96	0,14	***	0,1
2	75	16;65	35,757	26,20	5,30	96	0,15	***	0,1
2	100	16;51	35,744	26,22	5,24	95	0,18	***	0,2
2	150	15;02	35,545	26,41	5,27	92	0,28	***	1,3
2	200	13;90	35,415	26,55	5,21	89	0,38	***	2,7
1	300	9;66	34,777	26,86	5,27	82	0,87	***	13,1
1	500	6,19	34,445	27,11	4,42	63	1,47	***	21,1
1	700	4,30	34,387	27,29	4,30	59	1,82	***	29,5
1	900	3;51	34,433	27,41	4,00	54	1,96	***	32,2
1	1100	3;16	34,522	27,51	3,56	48	2,06	***	32,0
1	1300	2;93	34,589	27,59	3,50	47	1,90	***	31,1
1	1500	2;70	34,644	27,65	3,56	47	1,90	***	33,1

STATION	DATE	TIME	LATITUDE	LONGITUDE
DN 2/ 102/65	18/ 7/65	1900 H	34 00 S	111 50 E

SONIC DEPTH	AIR TEMP, WET	DRY	WIND DIR,	SP,	ANEM, HEIGHT	CLOUD TYPE	AMT,	VIS,	SEA DIR,	AMT,	SWELL DIR,	AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
2140	13,9	11,7	31	6	25	8	9	6	30	3	32	4	1007,5	20	15	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	16,08	35,712	26,29	5,42	97	0,14	***	0,4
2	25	15,98	35,704	26,31	5,42	97	0,14	***	0,3
2	50	15,28	35,634	26,42	5,45	96	0,21	***	0,6
2	75	14,76	35,538	26,46	5,42	94	0,24	***	1,2
2	100	13,84	35,395	26,54	5,39	92	0,35	***	2,2
2	150	12,65	35,217	26,65	5,42	90	0,45	***	4,0
2	200	11,95	35,112	26,70	5,71	93	0,47	***	4,5
1	283	10,95	34,985	26,79	5,53	89	0,62	***	7,8
1	472	9,30	34,717	26,87	5,48	85	0,92	***	14,4
1	664	8,44	34,604	26,92	5,21	79	1,13	***	17,7
1	858	5,89	34,418	27,13	4,48	64	1,61	***	26,7
1	1054	3,85	34,403	27,35	4,18	57	1,87	***	33,3
1	1251	3,29	34,501	27,48	3,74	50	1,94	***	34,4
1	1451	2,92	34,553	27,56	3,68	49	1,96	***	34,7

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 103/65	19/ 7/65	1400 H	32 00 S	111 50 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
4846	12.8	15.3	20	5	25	8	5	7	20	3	20	4	1023.3	0	7	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	19.48	35.671	25.43	5.05	97	0.13	0.22	0.6
2	25	19.44	35.669	25.44	5.05	97	0.15	***	0.4
2	50	19.43	35.670	25.44	5.03	96	0.13	0.23	0.2
2	75	19.32	35.697	25.49	4.98	95	0.13	***	0.1
2	100	18.86	35.751	25.65	5.01	95	0.13	0.25	0.2
2	150	17.13	35.767	26.09	5.11	93	0.19	***	0.4
2	200	15.34	35.594	26.37	5.36	94	0.26	0.39	0.7
2	300	12.92	35.307	26.66	5.32	89	0.45	0.57	4.2
2	400	10.86	34.960	26.79	5.51	86	0.68	***	8.1
2	500	9.83	34.792	26.84	5.56	87	0.82	0.95	11.4
2	700	8.41	34.614	26.93	5.18	78	1.09	1.23	17.9
1	900	5.75	34.424	27.15	4.38	62	1.54	1.72	28.0
1	1100	4.06	34.452	27.37	3.70	51	1.86	1.97	32.0
1	1300	3.61	34.570	27.51	3.33	45	1.90	2.04	33.7
1	1500	3.13	34.587	27.57	3.35	45	1.97	2.20	34.9
1	2000	2.47	34.698	27.71	3.58	47	1.90	2.09	34.0
1	2500	2.09	34.721	27.76	3.82	50	1.84	2.06	32.9
1	3000	1.73	34.730	27.80	4.10	53	1.84	1.92	32.6
1	3500	1.44	34.724	27.81	4.27	55	1.78	1.91	31.8
1	4000	1.28	34.719	27.82	4.34	56	1.77	1.96	32.2
1	4500	1.18	34.716	27.83	4.43	57	1.77	1.99	31.8

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 105/65	20/ 7/65	0045 H	31 59 S	113 14 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
4646	10,0	12,8	20	1	25	8	6	7	20	1	21	2	1019,6	15	5	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	18,19	35,771	25,83	5,19	97	0,18	***	0,4
2	25	18,17	35,769	25,84	5,18	97	0,15	***	0,3
2	50	17,50	35,840	26,06	5,21	96	0,18	***	0,1
2	75	16,69	35,797	26,17	5,17	94	0,21	***	0,3
2	100	16,33	35,726	26,25	5,05	91	0,29	***	1,0
2	150	15,07	35,590	26,43	5,11	90	0,33	***	1,9
2	200	13,07	35,317	26,64	5,31	89	0,63	***	4,0
1	273	11,72	35,104	26,74	5,47	89	0,63	***	6,7
1	455	8,92	34,674	26,90	5,41	83	1,02	***	16,4
1	639	7,28	34,468	26,98	4,74	70	1,37	***	24,4
1	825	4,30	34,398	27,30	4,25	56	1,87	***	32,0
1	1011	3,38	34,446	27,43	3,94	53	1,99	***	34,6
1	1200	3,17	34,580	27,56	3,51	47	1,94	***	34,9
1	1392	2,92	34,592	27,59	3,49	46	2,01	***	34,6

STATION	DATE	TIME	LATITUDE	LONGITUDE
LM 2/ 106/65	20/ 7/65	0700 H	31 59 S	114 25 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
4133	11.7	15.3	18	2	25	8	2	7	19	2	20	2	1019.8	10	0	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	19.40	35.653	25.44	5.11	98	0.13	***	0.5
2	25	19.23	35.647	25.48	5.10	97	0.10	***	0.3
2	50	19.11	35.688	25.54	5.05	96	0.10	***	0.3
2	75	18.32	35.776	25.81	4.99	93	0.13	***	0.4
2	100	17.26	35.755	26.04	5.02	92	0.18	***	0.6
2	150	15.75	35.667	26.34	5.31	94	0.18	***	0.5
2	200	14.42	35.493	26.50	5.36	93	0.29	***	1.4
1	291	11.94	35.146	26.73	5.44	89	0.51	***	5.9
1	487	9.38	34.730	26.86	5.44	84	0.86	***	13.8
1	685	7.97	34.554	26.95	5.00	75	1.14	***	20.2
1	884	5.00	34.397	27.22	4.38	61	1.60	***	30.2
1	1083	3.79	34.455	27.40	3.76	51	1.85	***	34.2
1	1283	3.34	34.529	27.50	3.48	47	1.97	***	35.5
1	1483	2.93	34.594	27.59	3.54	47	1.94	***	35.5

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 27 108/65	20/ 7/65	1250 H	32 04 S	115 19 E

SONIC DEPTH	AIR TEMP, WET	DRY	WIND DIR,	SP.	ANEM, HEIGHT	CLOUD TYPE	AMT,	VIS,	SEA DIR,	AMT,	SWELL DIR,	AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
183	13,9	17,8	19	2	25	8	3	7	21	2	21	1	1026,0	0	*	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
1	0	20,91	35,434	24,87	4,95	97	0,13	***	0,2
1	10	20,80	35,443	24,91	4,92	96	0,15	***	0,1
1	20	20,80	35,466	24,92	4,88	96	0,13	***	0,1
1	30	20,80	35,474	24,93	4,86	95	0,12	***	0,1
1	40	20,80	35,476	24,93	4,91	96	0,13	***	0,0
1	50	20,80	35,479	24,93	4,88	96	0,15	***	0,2
1	75	20,80	35,486	24,94	4,88	96	0,15	***	0,1
1	100	20,73	35,513	24,98	4,85	95	0,20	***	0,1
1	125	20,67	35,545	25,02	4,84	95	0,20	***	0,1
1	150	20,52	35,597	25,10	4,83	94	0,21	***	0,2
1	175	20,32	35,642	25,19	4,79	93	0,20	***	0,2

STATION	DATE	TIME	LATITUDE	LONGITUDE
DR 2/ 109/65	20/ 7/65	2230 H	30 00 S	114 30 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
201	13,9	18,3	18	2	25	*	0	7	18	1	16	1	1020,4	0	*	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
1	0	21,96	35,346	24,51	4,81	96	0,15	***	0,1
1	10	21,66	35,336	24,53	4,78	96	0,15	***	0,0
1	20	21,86	35,338	24,53	4,78	96	0,14	***	0,0
1	30	21,86	35,335	24,53	4,76	96	0,14	***	0,0
1	40	21,86	35,334	24,53	4,78	96	0,14	***	0,1
1	50	21,86	35,335	24,53	4,78	96	0,13	***	0,0
1	75	21,86	35,336	24,53	4,78	96	0,14	***	0,1
1	100	21,86	35,338	24,53	4,75	95	0,14	***	0,1
1	125	21,63	35,362	24,61	4,67	93	0,18	***	0,4
1	150	21,60	35,360	24,62	4,67	93	0,16	***	0,2
1	175	21,60	35,359	24,62	4,67	93	0,19	***	0,3

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 111/65	21/ 7/65	0330 H	30 01 S	113 39 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	13,9	17,8	21	3	25	8	7	7	18	1	18	2	1019,1	25	8	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	22,15	35,296	24,42	4,78	96	0,20	***	0.1
2	25	22,15	35,312	24,43	4,70	94	0,20	***	0.1
2	50	22,00	35,367	24,52	4,67	94	0,19	***	0.2
2	75	21,55	35,443	24,70	4,70	93	0,20	***	0.1
2	100	21.20	35,491	24,83	4,72	93	0,17	***	0.2
2	150	19,97	35.636	25,27	4,91	95	0,16	***	0.1
2	200	18,77	35,781	25,70	4,84	91	0,22	***	0.5
1	203	17,61	35,755	25,96	4,93	91	0,24	***	0.9
1	336	12,56	35,264	26,70	5,33	88	0,47	***	4.0
1	474	9,04	34,701	26,90	5,37	82	1,04	***	10.0
1	610	7,01	34,491	27,04	4,61	67	1,40	***	14.6
1	755	5,04	34,405	27,22	4,25	59	1,78	***	15.7
1	917	4,07	34,456	27,37	3,72	51	1,83	***	16.1
1	1096	3,59	34,532	27,48	3,31	45	1,96	***	17.9

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 112/65	21/ 7/65	0715 H	30 00 S	113 01 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	11.7	16.7	21	4	25	3	1	7	21	2	22	3	1026.1	10	9	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	20.67	35.470	24.96	4.90	96	0.13	***	0.4
2	25	20.68	35.468	24.96	4.96	97	0.12	***	0.1
2	50	20.68	35.472	24.96	4.93	96	0.12	***	0.0
2	75	19.54	35.591	25.35	5.02	96	0.12	***	0.0
2	100	19.01	35.662	25.54	5.05	96	0.12	***	0.1
2	150	17.61	35.757	25.96	5.02	93	0.19	***	0.6
2	200	16.04	35.668	26.27	5.13	92	0.24	***	0.6
1	260	13.81	35.421	26.57	5.23	89	0.42	***	2.1
1	434	8.02	34.602	26.98	5.03	75	1.18	***	13.8
1	615	5.46	34.417	27.18	4.40	62	1.63	***	25.4
1	806	4.10	34.444	27.36	3.61	52	1.86	***	26.9
1	999	3.71	34.530	27.46	3.31	45	2.06	***	28.7
1	1194	3.36	34.569	27.53	3.34	45	2.04	***	34.6
1	1390	3.11	34.593	27.57	3.40	45	2.04	***	34.2

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 114/65	21/ 7/65	1505 H	29 57 S	111 50 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	13,9	16,3	21	3	.25	3	1	7	21	1	22	3	1021,9	15	0	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	21,73	35,374	24,60	4,85	97	0,17	***	5,7
2	25	21,58	35,363	24,63	4,84	96	0,17	***	0,3
2	50	21,56	35,368	24,64	4,75	94	0,17	***	0,2
2	75	21,16	35,483	24,84	4,62	91	0,20	***	0,5
2	100	20,84	35,569	24,99	4,67	92	0,17	***	0,4
2	150	19,06	35,743	25,59	4,84	92	0,17	***	0,2
2	200	16,55	35,710	26,18	4,93	89	0,28	***	0,9
1	262	13,59	35,417	26,61	5,26	89	0,44	***	2,2
1	471	10,00	34,839	26,85	5,52	87	0,81	***	6,0
1	659	8,30	34,596	26,93	5,14	77	1,14	***	9,9
1	848	4,95	34,400	27,23	4,32	60	1,75	***	14,9
1	1036	3,88	34,455	27,39	3,75	51	1,94	***	13,8
1	1224	3,52	34,555	27,50	3,85	52	2,03	***	15,5

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 115/65	21/ 7/65	2000 H	30 00 S	110 50 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	12,2	15,6	20	4	25	*	0	7	20	3	21	2	1024,9	5	15	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	19,26	35,724	25,53	5,06	96	0,12	***	0,2
2	25	19,24	35,729	25,53	5,05	96	0,12	***	0,2
2	50	19,24	35,726	25,53	5,09	97	0,10	***	0,1
2	75	18,86	35,797	25,69	4,96	94	0,13	***	0,2
2	100	18,43	35,833	25,82	5,11	96	0,11	***	0,1
2	150	17,05	35,791	26,13	5,03	92	0,20	***	0,6
2	200	15,03	35,598	26,44	5,11	89	0,32	***	1,2
1	265	13,06	35,341	26,66	5,34	90	0,43	***	2,0
1	475	9,85	34,821	26,86	5,47	85	0,84	***	5,3
1	665	8,53	34,623	26,92	5,31	80	1,07	***	7,8
1	858	5,75	34,422	27,15	4,47	64	1,56	***	13,7
1	1052	3,97	34,430	27,36	3,99	54	1,88	***	18,3
1	1249	3,42	34,519	27,48	3,52	47	1,94	***	16,9
1	1448	3,01	34,584	27,57	3,52	47	1,94	***	16,9

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 116/65	21/ 7/65	2325 H	29 57 S	110 10 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	11,7	15,0	20	4	25	*	0	7	20	3	21	2	1025,2	0	5	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	18,08	35,879	25,94	5,23	96	0,11	***	0,4
2	25	18,08	35,892	25,95	5,20	97	0,16	***	0,1
2	50	18,06	35,885	25,95	5,21	97	0,11	***	0,2
2	75	17,99	35,872	25,96	5,22	97	0,13	***	0,1
2	100	17,90	35,868	25,98	5,23	97	0,10	***	0,4
2	150	16,77	35,766	26,17	5,03	91	0,23	***	0,8
2	200	14,32	35,533	26,55	5,18	89	0,40	***	1,8
1	294	12,36	35,223	26,71	5,37	89	0,52	***	3,7
1	491	9,01	34,681	26,89	5,39	83	0,99	***	7,8
1	687	6,80	34,481	27,06	4,66	68	1,42	***	14,6
1	883	4,35	34,436	27,32	3,83	53	1,88	***	18,7
1	1079	3,89	34,519	27,44	3,23	44	2,03	***	21,7
1	1275	3,40	34,567	27,52	3,24	44	2,03	***	24,5
1	1472	3,01	34,613	27,60	3,35	45	2,01	***	21,0

STATION	DATE	TIME	LATITUDE	LONGITUDE
DN 2/ 11//65	22/ 7/65	1450 H	28 04 S	108 38 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	16,7	17,8	15	4	25	6	4	7	15	3	14	3	1023,0	15	5	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	18,62	35,753	25,71	5,17	97	0,17	***	0,2
2	25	18,53	35,776	25,75	5,19	98	0,18	***	0,3
2	50	17,92	35,826	25,94	5,22	97	0,18	***	0,2
2	75	17,70	35,836	26,00	5,20	96	0,19	***	0,1
2	100	17,37	35,829	26,08	5,20	96	0,19	***	0,2
2	150	16,18	35,718	26,27	5,08	91	0,39	***	1,3
2	200	14,52	35,555	26,52	5,16	89	0,39	***	2,8
1	269	12,66	35,282	26,70	5,36	89	0,53	***	5,2
1	462	9,70	34,790	26,86	5,51	86	0,87	***	11,7
1	678	8,30	34,606	26,94	5,08	77	1,19	***	18,6
1	876	5,43	34,415	27,18	4,44	63	1,68	***	29,8
1	1075	4,03	34,475	27,39	3,63	50	1,99	***	36,0
1	1274	3,52	34,560	27,51	3,27	44	2,06	***	36,4
1	1473	3,17	34,610	27,58	3,27	44	2,08	***	35,8

STATION	DATE	TIME	LATITUDE	LONGITUDE
DN 2/ 118/65	22/ 7/65	2210 H	28 03 S	109 55 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	18,9	19,3	14	5	25	*	0	7	14	3	17	3	1025,2	10	0	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
1	0	20,66	35,496	24,98	4,86	95	0,11	***	0,6
1	25	19,87	35,568	25,26	4,96	96	0,18	***	0,3
1	50	19,72	35,615	25,32	5,00	96	0,13	***	0,2
1	75	19,58	35,705	25,43	4,86	93	0,17	***	0,4
1	100	19,22	35,746	25,55	4,67	89	0,22	***	0,9
1	150	18,60	35,761	25,72	4,55	86	0,23	***	1,5
1	200	17,63	35,771	25,97	4,77	88	0,25	***	1,4
2	279	16,08	35,689	26,28	4,92	88	0,33	***	1,6
2	464	8,44	34,633	26,94	4,99	75	0,94	***	17,9
2	650	5,98	34,450	27,14	4,37	62	1,55	***	27,1
2	836	4,72	34,504	27,34	3,26	45	1,66	***	33,3
2	1022	3,98	34,541	27,45	3,11	42	1,99	***	34,5
2	1207	3,55	34,572	27,51	3,11	42	1,90	***	35,1
2	1393	3,18	34,604	27,57	3,23	43	2,01	***	34,7

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 119/65	23/ 7/65	0745 H	28 03 S	111 00 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	17,2	19,4	11	4	25	3	4	7	11	3	18	1	1024,2	10	10	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	20,60	35,514	25,01	4,92	96	0,16	***	0,5
2	25	20,50	35,532	25,05	4,92	96	0,15	***	0,5
2	50	20,42	35,549	25,09	4,92	96	0,15	***	0,1
2	75	20,26	35,607	25,17	4,86	94	0,13	***	0,1
2	100	20,05	35,680	25,29	4,49	87	0,26	***	1,1
2	150	19,38	35,783	25,54	4,86	93	0,18	***	0,4
2	200	18,49	35,830	25,80	4,83	91	0,20	***	0,7
1	289	15,68	35,681	26,36	4,95	88	0,33	***	1,8
1	462	10,96	34,989	26,79	5,38	86	0,73	***	9,6
1	675	8,92	34,672	26,89	5,26	80	1,02	***	16,7
1	868	6,45	34,459	27,09	4,43	64	1,47	***	27,0
1	1060	4,17	34,441	27,35	3,79	52	1,86	***	33,2
1	1253	3,56	34,503	27,46	3,47	47	1,97	***	35,8
1	1446	3,15	34,562	27,54	3,41	46	1,95	***	35,3

STATION	DATE	TIME	LATITUDE	LONGITUDE
DN 2/ 120/05	23/ 7/65	1250 H	27 56 S	112 00 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	16,1	20,6	11	3	25	1	2	8	11	3	18	1	1023,0	30	0	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	19,71	35,601	25,31	4,95	95	0,14	***	0,5
2	25	19,68	35,601	25,32	4,98	96	0,17	***	0,4
2	50	19,66	35,602	25,33	5,04	97	0,14	***	0,2
2	75	19,11	35,782	25,61	4,80	91	0,21	***	0,6
2	100	18,85	35,816	25,70	4,83	91	0,18	***	0,2
2	150	17,71	35,809	25,98	4,74	88	0,30	***	1,0
2	200	15,83	35,700	26,34	4,86	87	0,38	***	1,9
1	267	13,99	35,490	26,59	5,07	87	0,43	***	3,5
1	446	10,84	35,000	26,82	5,34	85	0,74	***	9,4
1	624	8,83	34,669	26,91	5,22	80	1,08	***	16,5
1	802	6,82	34,492	27,06	4,49	65	1,46	***	25,5
1	980	4,53	34,448	27,31	3,77	52	1,89	***	32,4
1	1149	3,88	34,527	27,44	3,26	44	1,97	***	34,3
1	1337	3,38	34,584	27,54	3,17	43	1,99	***	34,9

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 121/65	23/ 7/65	1700 H	27 55 S	112 45 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	15,0	19,4	12	4	25	4	5	7	14	3	15	1	1023,0	15	5	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	21,24	35,398	24,75	4,89	97	0,15	***	0,4
2	25	20,61	35,468	24,97	4,95	97	0,13	***	0,2
2	50	19,58	35,631	25,37	4,95	95	0,12	***	0,1
2	75	19,00	35,765	25,62	4,92	93	0,17	***	0,3
2	100	18,46	35,816	25,80	4,92	92	0,17	***	0,3
2	150	17,27	35,785	26,07	4,86	89	0,24	***	1,0
2	200	14,89	35,598	26,47	4,54	79	0,31	***	2,1
1	262	13,17	35,355	26,65	5,25	88	0,39	***	3,9
1	437	9,85	34,817	26,85	5,46	85	0,86	***	12,9
1	613	8,18	34,581	26,94	5,07	76	1,14	***	20,1
1	962	4,52	34,446	27,31	3,77	52	1,83	***	30,7

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 123/65	23/ 7/65	2200 H	27 53 S	113 09 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
183	15,8	19,4	12	4	25	*	0	7	12	3	15	2	1023,7	5	0	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	22,87	35,248	24,18	4,72	96	0,19	***	0.4
2	10	22,90	35,237	24,16	4,66	95	0,19	***	0.3
2	20	22,90	35,237	24,16	4,66	95	0,23	***	0.2
2	30	22,91	35,240	24,16	4,61	94	0,14	***	0.2
2	40	22,90	35,238	24,16	4,61	94	0,16	***	0.1
2	50	22,89	35,238	24,17	4,64	95	0,12	***	0.2
2	75	22,76	35,267	24,23	4,61	94	0,20	***	0.3
2	100	22,64	35,281	24,27	4,61	93	0,13	***	0.2
2	125	22,57	35,300	24,30	4,55	92	0,18	***	0.3
2	150	22,47	35,312	24,34	4,64	94	0,14	***	0.2
2	175	22,22	35,379	24,46	4,52	91	0,17	***	0.3

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 124/65	24/ 7/65	0745 H	26 00 S	112 20 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
185	17.8	21.1	15	4	25	3	1	8	14	2	15	3	1022.6	5	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	22.79	35.236	24.19	4.74	96	0.13	***	0.1
1	10	22.79	35.221	24.18	4.74	96	0.13	***	0.2
1	20	22.76	35.233	24.20	4.73	96	0.12	***	0.0
1	30	22.47	35.317	24.34	4.75	96	0.13	***	0.1
1	40	22.40	35.332	24.38	4.78	97	0.10	***	0.1
1	50	22.32	35.348	24.41	4.73	95	0.10	***	0.1
1	75	22.21	35.368	24.46	4.77	96	0.13	***	0.0
1	100	21.82	35.409	24.60	4.37	87	0.25	***	1.2
1	125	21.15	35.470	24.83	4.26	84	0.29	***	1.8
1	150	20.51	35.500	25.03	4.20	82	0.31	***	2.3
1	175	19.64	35.648	25.37	4.46	86	0.29	***	1.9

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 27 126/65	24/ 7/65	1200 H	26 03 S	111 50 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
841	18,9	21,1	14	4	25	8	2	7	14	2	15	2	1023,3	15	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	20,33	35,553	25,11	5,03	98	0,14	***	0.1
1	24	20,14	35,596	25,20	5,03	97	0,14	***	0.1
1	47	19,74	35,637	25,34	5,02	97	0,15	***	0.1
1	71	19,52	35,735	25,47	4,95	95	0,19	***	0.1
1	95	18,96	35,797	25,66	4,84	92	0,21	***	0.5
1	142	17,72	35,794	25,97	4,63	89	0,26	***	0.9
1	190	16,34	35,725	26,24	4,96	89	0,31	***	1.5
1	284	12,18	35,209	26,73	5,40	89	0,56	***	6.1
1	474	8,75	34,657	26,91	5,39	82	1,09	***	17.3
1	663	6,24	34,473	27,13	4,45	64	1,57	***	28.0
1	758	4,95	34,446	27,26	3,88	54	1,86	***	33.8

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 12//65	24/ 7/65	1530 H	26 01 S	111 00 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	18,3	20.6	14	3	25	8	2	8	14	1	15	3	1021,9	15	8	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	20,98	35,515	24,91	4,97	98	0,11	***	0,4
2	25	20,91	35,509	24,92	4,96	97	0,12	***	0,2
2	50	20,65	35,552	25,03	4,92	96	0,14	***	0.1
2	75	20,47	35,564	25,09	4,97	97	0,12	***	0,0
2	100	19,91	35,695	25,33	4,71	91	0,19	***	1,0
2	150	18,49	35,770	25,76	4,62	87	0,29	***	1,4
2	200	17,70	35,857	26,02	5,06	94	0,18	***	0,4
1	266	14,71	35,584	26,50	5,06	88	0,37	***	2,6
1	477	10,87	34,997	26,82	5,43	87	0,71	***	9,6
1	669	8,61	34,637	26,92	5,27	80	1,05	***	0,0
1	862	5,36	34,425	27,20	4,31	61	1,62	***	27,8
1	1054	4,53	34,555	27,40	2,88	40	2,06	***	37,1
1	1252	3,91	34,594	27,49	2,86	39	2,13	***	37,9
1	1451	3,42	34,628	27,57	3,03	41	2,02	***	37,1

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 128/65	24/ 7/65	2207 H	26 00 S	110 00 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	WIRE ANGLES CAST2	WIRE ANGLES CAST3
***	17,8	20,6	14	5	25	4	1	7	14	3	15	2	1023,0	25	14	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	22,21	35,321	24,42	4,82	97	0,17	***	0,5
2	25	22,18	35,310	24,42	4,86	98	0,17	***	0,4
2	50	22,18	35,335	24,44	4,79	96	0,17	***	0,2
2	75	21,87	35,407	24,58	4,76	95	0,17	***	0,2
2	100	21,58	35,478	24,72	4,55	91	0,21	***	0,6
2	150	20,21	35,616	25,19	4,48	87	0,25	***	1,2
2	200	18,34	35,770	25,79	4,73	89	0,29	***	1,2
1	249	16,42	35,713	26,22	4,79	86	0,36	***	2,4
1	425	11,61	35,105	26,76	5,34	87	0,68	***	8,1
1	603	9,00	34,686	26,89	5,36	82	1,01	***	16,9
1	783	6,27	34,471	27,12	4,36	63	1,65	***	29,0
1	966	4,82	34,522	27,34	3,09	43	2,08	***	35,8
1	1160	4,22	34,576	27,45	2,81	39	2,08	***	36,2
1	1356	3,46	34,587	27,53	3,15	42	2,08	***	36,8

STATION	DATE	TIME	LATITUDE	LONGITUDE
DN 2/ 129/65	25/ 7/65	0430 H	25 57 S	109 00 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	17,8	20,0	12	4	25	4	4	6	12	3	13	3	1022,1	5	0	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	21,02	35,528	24,91	4,99	98	0,13	***	0.4
2	25	21,03	35,517	24,90	4,91	97	0,11	***	0.4
2	50	21,05	35,525	24,90	4,92	97	0,10	***	0.1
2	75	21,05	35,520	24,90	4,91	97	0,11	***	0.0
2	100	21,03	35,528	24,91	4,90	97	0,10	***	0.1
2	150	19,18	35,722	25,54	4,52	86	0,27	***	1.2
2	200	17,66	35,770	25,96	4,73	87	0,28	***	1.6
1	295	13,71	35,430	26,60	5,23	89	0,41	***	3.7
1	492	8,76	34,670	26,92	5,34	81	1,04	***	17.9
1	689	5,73	34,441	27,17	4,34	62	1,59	***	29.7
1	886	4,23	34,485	27,37	3,51	48	1,92	***	36.4
1	1083	3,59	34,531	27,48	3,38	46	2,00	***	37.7
1	1280	3,38	34,616	27,56	3,09	42	2,04	***	37.7
1	1477	2,91	34,664	27,65	3,26	43	2,00	***	36.8

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 130/65	25/ 7/65	0930 H	26 00 S	108 00 E

SONIC DEPTH	AIR TEMP, WET	DRY	WIND DIR,	SP,	ANEM, HEIGHT	CLOUD TYPE	AMT,	VIS,	SEA DIR,	AMT,	SWELL DIR,	AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	17,8	18,9	17	6	25	4	7	6	17	3	15	2	1022,9	0	0	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	20,50	35,622	25,12	4,90	96	0,16	***	0,3
2	25	20,52	35,606	25,10	4,87	95	0,11	***	0,2
2	50	20,53	35,605	25,10	4,87	95	0,11	***	***
2	75	20,54	35,606	25,10	4,87	95	0,12	***	0,4
2	100	19,91	35,742	25,37	4,49	87	0,22	***	0,9
2	150	18,35	35,815	25,83	4,96	93	0,23	***	0,2
2	200	17,92	35,835	25,95	4,96	92	0,23	***	0,1
1	274	16,04	35,736	26,32	4,81	86	0,32	***	1,8
1	454	10,79	34,991	26,83	5,35	85	0,75	***	10,0
1	635	9,00	34,691	26,90	5,20	80	1,02	***	***
1	815	6,79	34,493	27,07	4,53	66	1,41	***	26,9
1	994	4,51	34,437	27,31	3,90	54	1,94	***	35,2
1	1162	3,91	34,542	27,45	3,11	42	2,05	***	36,9
1	1378	3,53	34,616	27,55	2,93	40	2,13	***	37,9

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 131/65	25/ 7/65	1510 H	25 52 S	107 10 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	16,1	17,8	14	7	25	8	9	6	14	6	17	6	1021,9	12	10	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	20,82	35,540	24,97	4,87	96	0,15	***	0,3
2	25	20,83	35,542	24,97	4,81	94	0,12	***	0,2
2	50	20,85	35,539	24,96	4,87	96	0,12	***	0,4
2	75	20,86	35,539	24,96	4,86	95	0,11	***	0,3
2	100	20,85	35,545	24,97	4,81	94	0,12	***	0,2
2	150	19,19	35,748	25,56	4,84	92	0,15	***	0,3
2	200	17,66	35,788	25,98	4,64	86	0,31	***	1,4
1	268	14,50	35,565	26,54	5,05	87	0,37	***	2,4
1	480	10,67	34,957	26,82	5,33	85	0,76	***	8,7
1	671	8,71	34,650	26,91	5,20	79	1,03	***	14,8
1	863	5,93	34,498	27,19	3,80	54	1,71	***	24,6
1	1054	4,45	34,493	27,36	3,38	47	1,95	***	25,8
1	1250	4,04	34,581	27,47	2,84	39	2,08	***	28,5
1	1447	3,47	34,623	27,56	2,93	40	2,04	***	25,8

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 132/65	26/ 7/65	0100 H	24 06 S	107 03 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	18,9	20,6	11	6	25	4	9	6	12	4	13	4	1020,0	8	7	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	21,92	35,242	24,44	4,80	96	0,13	***	0,5
2	25	21,92	35,237	24,44	4,81	96	0,13	***	0,4
2	50	21,61	35,379	24,63	4,70	94	0,13	***	0,5
2	75	21,28	35,585	24,86	4,81	95	0,15	***	0,4
2	100	20,17	35,655	25,23	4,52	88	0,23	***	1,3
2	150	18,36	35,748	25,77	4,46	84	0,34	***	1,8
2	200	17,16	35,744	26,07	4,49	82	0,37	***	2,4
1	276	14,68	35,509	26,47	4,75	82	0,49	***	4,2
1	461	9,40	34,762	26,89	5,20	80	0,95	***	12,2
1	645	6,58	34,532	27,13	3,92	57	1,57	***	26,3
1	828	5,40	34,568	27,31	2,69	38	2,00	***	27,7
1	1010	4,57	34,607	27,43	2,48	34	2,10	***	32,9
1	1195	4,05	34,613	27,50	2,66	36	2,09	***	33,8
1	1388	3,51	34,642	27,57	2,81	38	2,10	***	32,7

STATION	DATE	TIME	LATITUDE	LONGITUDE
DR 27 133/65	26/ 7/65	0925 H	23 58 S	107 59 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	17,8	21,7	12	6	25	8	6	7	12	4	13	5	1021,2	15	0	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	22,89	35,175	24,12	4,67	95	0,12	***	0,5
2	25	22,66	35,160	24,12	4,67	95	0,10	***	0,4
2	50	22,12	35,166	24,33	4,75	95	0,11	***	0,4
2	75	21,54	35,447	24,71	4,64	92	0,14	***	0,4
2	100	20,90	35,566	24,97	4,49	88	0,21	***	0,9
2	150	19,38	35,728	25,50	4,64	89	0,22	***	0,6
2	200	17,89	35,750	25,89	4,43	82	0,37	***	2,2
1	265	15,91	35,620	26,26	4,37	78	0,42	***	4,2
1	442	11,24	35,043	26,78	5,20	84	0,70	***	7,1
1	624	8,50	34,643	26,94	5,08	77	1,14	***	12,4
1	810	5,72	34,501	27,22	3,59	51	1,79	***	20,7
1	1000	4,95	34,595	27,38	2,48	35	2,13	***	26,9
1	1194	4,30	34,624	27,48	2,48	34	2,14	***	25,8
1	1389	3,56	34,618	27,55	2,95	40	2,05	***	24,6

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 134/65	26/ 7/65	1430 H	24 00 S	108 56 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	17,8	21,7	11	5	25	5	5	7	12	3	12	1	1019,6	10	0	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	23,40	35,200	23,99	4,66	96	0,18	***	0,9
2	25	23,37	35,190	23,99	4,66	96	0,20	***	0,8
2	50	23,40	35,190	23,98	4,66	96	0,20	***	0,5
2	75	23,40	35,188	23,98	4,63	95	0,20	***	0,4
2	100	21,63	35,107	24,42	3,39	67	0,57	***	5,1
2	150	19,85	35,238	25,00	3,43	66	0,60	***	6,1
2	200	18,70	35,535	25,52	3,90	73	0,50	***	3,9
1	286	15,92	35,606	26,25	4,45	79	0,50	***	3,5
1	461	10,63	34,944	26,82	5,32	85	0,78	***	7,6
1	677	8,04	34,589	26,97	4,87	73	1,23	***	13,7
1	874	5,54	34,545	27,27	2,98	42	1,94	***	22,1
1	1072	4,63	34,592	27,42	2,58	36	2,11	***	26,9
1	1271	3,97	34,607	27,50	2,76	38	2,08	***	25,8
1	1470	3,37	34,628	27,58	3,05	41	2,02	***	25,0

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 135/65	26/ 7/65	1950 H	24 02 S	110 00 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
***	15,6	21,7	11	6	25	8	1	7	11	5	13	4	1021,2	0	0	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	23,10	35,222	24,09	4,69	96	0,13	***	0,8
2	25	23,09	35,199	24,08	4,66	95	0,13	***	0,6
2	50	23,12	35,198	24,07	4,66	95	0,15	***	0,5
2	75	23,12	35,198	24,07	4,67	96	0,17	***	0,6
2	100	21,20	35,092	24,53	3,26	64	0,57	***	7,1
2	150	20,51	35,646	25,14	4,49	88	0,27	***	1,2
2	200	18,68	35,666	25,63	4,22	80	0,40	***	3,0
1	280	16,75	35,724	26,15	4,57	83	0,40	***	3,0
1	470	10,85	34,980	26,81	5,33	85	0,76	***	9,7
1	664	8,57	34,625	26,91	5,07	77	1,22	***	18,4
1	862	5,55	34,528	27,26	3,22	46	1,91	***	30,5
1	1060	4,79	34,593	27,40	2,54	35	***	***	33,6
1	1259	4,21	34,628	27,49	2,59	36	1,89	***	35,5
1	1459	3,51	34,626	27,56	2,96	40	1,83	***	35,0

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 130/65	27/ 7/65	0445 H	23 57 S	111 03 E

SONIC DEPTH	AIR TEMP, WET	AIR TEMP, DRY	WIND DIR,	WIND SP,	ANEM, HEIGHT	CLOUD TYPE	CLOUD AMT,	VIS,	SEA DIR,	SEA AMT,	SWELL DIR,	SWELL AMT,	ATMOS, PRESSURE	WIRE ANGLES CAST1	WIRE ANGLES CAST2	WIRE ANGLES CAST3
***	16,3	21,7	11	3	25	*	0	7	11	3	13	1	1016,4	20	5	*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG, P	TOTAL P	NITRATE
2	0	22,15	35,280	24,41	4,81	97	0,10	***	0,6
2	25	22,01	35,292	24,46	4,81	96	0,11	***	0,6
2	50	21,57	35,432	24,68	4,83	96	0,10	***	0,6
2	75	21,36	35,489	24,79	4,47	89	0,20	***	1,2
2	100	20,30	35,647	25,19	4,50	87	0,22	***	1,1
2	150	18,83	35,694	25,61	4,30	81	0,32	***	2,5
2	200	17,55	35,740	25,97	4,43	82	0,34	***	2,5
1	277	15,00	35,582	26,44	4,81	84	0,40	***	3,3
1	461	10,60	34,941	26,82	5,39	86	0,74	***	10,8
1	648	8,37	34,607	26,93	5,10	77	1,20	***	24,0
1	838	5,56	34,533	27,26	3,04	43	1,87	***	30,0
1	1030	4,79	34,594	27,40	2,48	35	2,08	***	31,7
1	1226	4,03	34,603	27,49	2,70	37	2,06	***	31,9
1	1424	3,43	34,629	27,57	2,95	40	2,01	***	33,1

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 2/ 137/65	27/ 7/65	0905 H	23 58 S	111 50 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
1335	18.3	21.7	11	2	25	*	0	9	11	1	13	3	1026.6	0	0	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	22.15	35.272	24.40	4.77	96	0.21	***	0.6
2	25	22.08	35.266	24.42	4.81	97	0.19	***	0.9
2	50	21.95	35.395	24.55	4.60	92	0.23	***	0.4
2	75	20.59	35.373	24.91	3.85	75	0.49	***	3.9
2	100	20.13	35.647	25.24	4.48	87	0.32	***	1.4
2	150	18.75	35.765	25.69	4.62	87	0.34	***	1.2
2	200	16.92	35.748	26.12	4.73	86	0.39	***	1.8
1	294	13.83	35.459	26.60	5.12	87	0.52	***	3.5
1	475	9.75	34.813	26.87	5.38	84	0.92	***	12.3
1	666	7.44	34.539	27.01	4.68	69	1.47	***	21.1
1	856	5.25	34.527	27.29	3.04	43	2.06	***	32.3
1	1046	4.57	34.575	27.41	2.65	37	2.19	***	33.3
1	1236	4.08	34.602	27.48	2.69	37	2.07	***	33.1

STATION	DATE	TIME	LATITUDE	LONGITUDE
DN 2/ 139/65	27/ 7/65	1545 H	24 02 S	112 50 E

SONIC DEPTH	AIR TEMP. WET	AIR TEMP. DRY	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	CLOUD AMT.	VIS.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	CAST3
163	19,4	23,9	11	2	25	5	1	8	13	2	13	3	1020,8	0	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	23,86	35,188	23,85	4,69	97	0,15	***	0,7
1	10	23,58	35,165	23,91	4,69	97	0,14	***	0,4
1	20	23,58	35,165	23,91	4,68	97	0,14	***	0,4
1	30	23,56	35,167	23,92	4,69	97	0,14	***	0,4
1	40	23,42	35,176	23,97	4,69	96	0,14	***	1,2
1	50	23,03	35,203	24,10	4,52	92	0,19	***	0,5
1	75	22,30	35,343	24,41	4,72	95	0,13	***	0,5
1	100	21,89	35,373	24,55	4,77	95	0,13	***	0,2
1	125	21,58	35,447	24,69	4,57	91	0,21	***	0,8
1	150	21,52	35,442	24,71	4,45	88	0,24	***	0,9
1	175	21,34	35,443	24,76	4,34	86	0,30	***	1,6

DATA

PART 3

CRAYFISH LARVAE

EXPLANATION OF HEADINGS

Part 3	Crayfish Larvae
STN	Gives the station number
DATE	Given as day/month/year
LATITUDE LONGITUDE	Given in degrees and minutes
TIME	Given in Zone Time, and is the time at the beginning of the tow. The code letter for the time zone follows the time. Zone Time throughout the cruise was Western Australian Standard Time, GMT +8 hr, Code H
DURATION	Duration of tow given in minutes

A blank indicates no crayfish larvae in sample
* indicates no data available

MIDWATER TRAWL SAMPLES - OBLIQUE HAULS

STN	DATE	LATITUDE	LONGITUDE	TIME	DURATION	DEPTH	PHYLLOSOMA			
							Panulirus cygnus	longipes		Scyllarids
							Stages			
							VI	VII	VIII	
98	18/7/65	34 00 S.	114 25 E.	0223 H	77	325-0		1		
101	18/7/65	34 00 S.	112 30 E.	1510 H	68	300-200-0				11
104	19/7/65	32 00 S.	111 50 E.	1928 H	62	300-0	4	1		3
107	20/7/65	32 03 S.	115 00 E.	1058 H	63	220-0				
110	20/7/65	30 00 S.	114 24 E.	2347 H	72	215-0				7
113	21/7/65	30 00 S.	112 25 E.	1053 H	74	185-0	1			1
116	21/7/65	29 57 S.	110 10 E.	2358 H	73	*	4			1
117	22/7/65	28 04 S.	108 38 E.	1618 H	69	200-0	1			
118	22/7/65	28 03 S.	109 55 E.	2242 H	72	250-0	1	2	1	
122	23/7/65	27 53 S.	113 00 E.	1942 H	72	220-0				3
125	24/7/65	26 02 S.	112 13 E.	0911 H	71	190/170-0				
128	24/7/65	26 00 S.	110 00 E.	2343 H	70	200-0	1			2
131	25/7/65	25 52 S.	107 10 E.	1700 H	66	150?-0		1		1
132	26/7/65	24 06 S.	107 03 E.	0120 H	63	180-0		1		
135	26/7/65	24 02 S.	110 00 E.	2332 H	63	215-0				
138	27/7/65	23 59 S.	112 30 E.	1326 H	71	225-0	1			

MIDWATER TRAWL SAMPLES - HORIZONTAL HAULS

STN	DATE	LATITUDE	LONGITUDE	TIME	DURATION	DEPTH	PHYLLOSOMA			
							Panulirus cygnus	longipes		Scyllarids
							Stages			
							VI	VII	VIII	
104	19/7/65	32 00 S.	111 50 E.	1725 H	60	180/220	1	1		7
113	21/7/65	30 00 S.	112 25 E.	1240 H	60	*	1	1	1	1
116	22/7/65	29 57 S.	110 10 E.	0254 H	60	160/205				
117	22/7/65	28 04 S.	108 38 E.	1325 H	60	*	2			
118	23/7/65	28 03 S.	109 55 E.	0243 H	60	230/155				
128	24/7/65	26 00 S.	110 00 E.	2040 H	60	160/200		1	1	
131	25/7/65	25 52 S.	107 10 E.	1334 H	60	155/200		1		1
132	26/7/65	24 06 S.	107 03 E.	0435 H	60	240/260			1	
135	26/7/65	24 02 S.	110 00 E.	2017 H	60	180/220				

N-70 PLANKTON NET SAMPLES

STN	DATE	LATITUDE	LONGITUDE	TIME	DURATION	DEPTH	PHYLLOSOMA					
							Panulirus cygnus		longipes			Scyllarids
							Stages					
							V	VI	VII	VIII	IX	
98	18/7/65	34 00 S.	114 25 E.	0220 H	30	0						
104	19/7/65	32 00 S.	111 50 E.	1930 H	30	0		1	1	1		4
107	20/7/65	32 03 S.	115 00 E.	1100 H	30	0						
110	20/7/65	30 00 S.	114 24 E.	2353 H	30	0						
113	21/7/65	30 00 S.	112 25 E.	1100 H	30	0						
116	21/7/65	29 57 S.	110 10 E.	2400 H	30	0		35	7	3	1	
117	22/7/65	28 04 S.	108 38 E.	1623 H	30	0						
118	22/7/65	28 03 S.	109 55 E.	2250 H	30	0	1	27	10	10		
122	23/7/65	27 53 S.	113 00 E.	1942 H	30	0						
125	24/7/65	26 02 S.	112 13 E.	0948 H	30	0						
128	24/7/65	26 00 S.	110 00 E.	2040 H	30	0						
128	24/7/65	26 00 S.	110 00 E.	2345 H	30	0		1				
131	25/7/65	25 52 S.	107 10 E.	1705 H	30	0						
132	26/7/65	24 06 S.	107 03 E.	0125 H	30	0		1				
135	26/7/65	24 02 S.	110 00 E.	2014 H	30	0						
135	26/7/65	24 02 S.	110 00 E.	2332 H	30	0						
138	27/7/65	23 59 S.	112 30 E.	1325 H	30	0						

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.
26. Oceanographical observations in the Pacific Ocean in 1963. H.M.A.S. *Gascoyne* Cruise G3/63.
29. Oceanographical observations in the Pacific Ocean in 1963. H.M.A.S. *Gascoyne* Cruise G4/63.

OCEANOGRAPHICAL CRUISE REPORTS

(Continued)

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.
33. Oceanographical observations in the Indian Ocean in 1964. H.M.A.S. *Diamantina* Cruise Dm1/64.
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.
38. Oceanographical observations in the Indian Ocean in 1964. H.M.A.S. *Diamantina* Cruise Dm4/64.
39. Oceanographical observations in the Pacific Ocean in 1964. H.M.A.S. *Gascoyne* Cruise G4/64.
40. Oceanographical observations in the Indian Ocean in 1964. H.M.A.S. *Diamantina* Cruise Dm5/64.
41. Oceanographical observations in the Indian Ocean in 1964. H.M.A.S. *Gascoyne* Cruise G5/64.
42. Oceanographical observations in the Pacific Ocean in 1964. H.M.A.S. *Gascoyne* Cruise G6/64.
43. Oceanographical observations in the Indian Ocean in 1965. H.M.A.S. *Gascoyne* Cruise G2/65.
44. Oceanographical observations in the Pacific Ocean in 1965. H.M.A.S. *Gascoyne* Cruise G3/65.
45. Oceanographical observations in the Pasific Ocean in 1965. H.M.A.S. *Gascoyne* Cruise G4/65.
46. Oceanographical observations in the Indian Ocean in 1965. H.M.A.S. *Gascoyne* Cruise G5/65.
49. Oceanographical observations in the Indian Ocean in 1965. H.M.A.S. *Diamantina* Cruise Dm2/65.
54. Oceanographical observations in the Indian Ocean in 1966. H.M.A.S. *Diamantina* Cruise Dm2/66.