OCEANOGRAPHICAL OBSERVATIONS
IN THE PACIFIC AND INDIAN OCEANS IN 1962
H.M.A.S. *GASCOYNE*
Cruises G 2/62 and G 3/62

OCEANOGRAPHICAL CRUISE REPORT NO. 16

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

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MELBOURNE, 1967

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CSIRO Aust. Oceanogr. Cruise Rep. No. 16

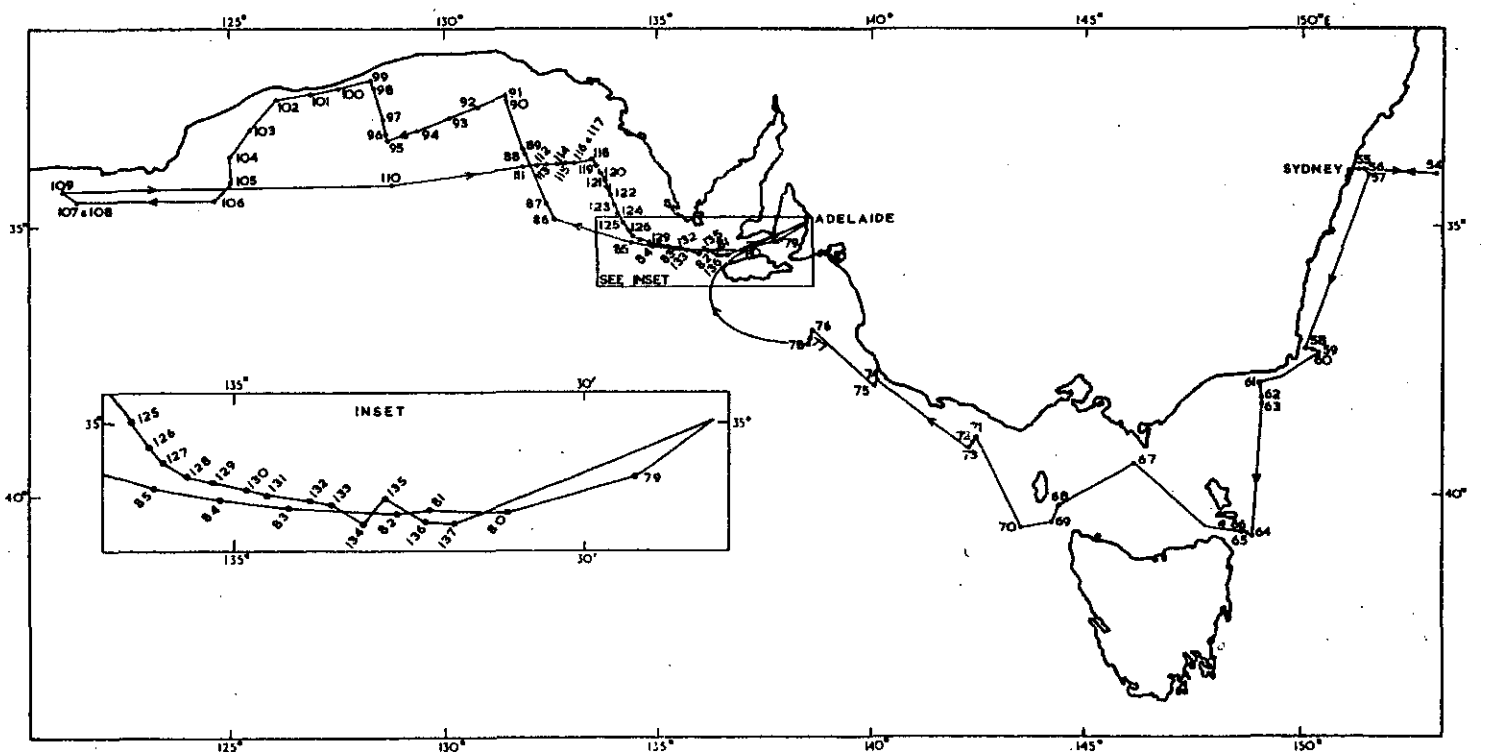

Fig. 1. Track chart Cruise G2/62

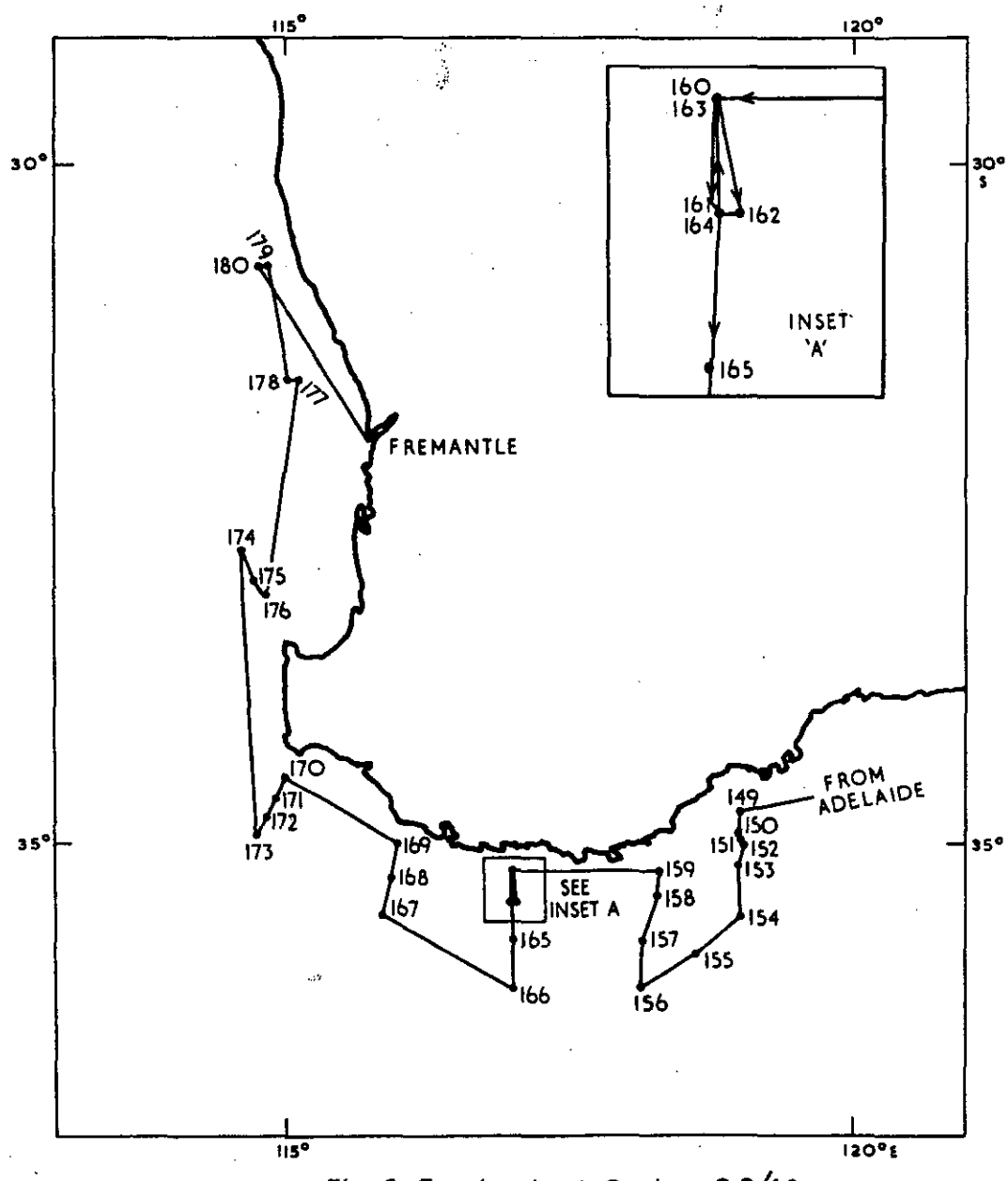

Fig. 2. Track chart Cruise G 3/62

OCEANOGRAPHICAL CRUISE REPORT

No. 16

Oceanographical Observations in the Pacific and Indian Oceans in 1962

H.M.A.S. Gascoyne

Cruises G2/62 and G3/62

June 18 - August 12, 1962

I. INTRODUCTION

This report records the data for the second and third cruises in 1962 of H.M.A.S. Gascoyne, Royal Australian Navy oceanographical frigate, in the Pacific and Indian Oceans.

Objectives

These were - to make quantitative determinations of the benthic fauna of the continental shelf and slope of southern Australia, between Sydney and Fremantle; to sample bottom sediments for mineral analysis; to determine zooplankton biomass of the area; to investigate the source of high salinity water discovered in the Great Australian Bight on Cruise G2/61; and to investigate hydrological conditions off Albany, Western Australia.

Itinerary

After working the Reference Station off Sydney on June 4-5, Cruise G2/62 left Sydney on June 18 and worked a series of stations between Sydney and Adelaide, through Bass Strait. From July 2-13 a series of stations was worked across the Great Australian Bight and back to Adelaide (Fig. 1).

Cruise G3/62 left Adelaide on August 3, and worked a series of stations between about 120°E. and Fremantle (Fig. 2). The hydrological winch was out of order on the outward run to Stations 160, 161, and 162. Hydrology casts for these stations were made on a repeat run later in the day, when Stations 163 and 164 were worked, these having the same positions as 160 and 161, respectively (Fig. 2, inset).

Personnel

Cruise G2/62

R.J. MacIntyre (Cruise Leader)
A. Bailey, Department of Botany, University of Adelaide (2/7/62-13/7/62)
K. Fleming
T. Middleton
W. Prothero (2/7/62-13/7/62)
C. Purday (18/6/62-28/6/62)

The analyses of hydrological samples were done in the ship's laboratory by Messrs Fleming and Prothero, and at Cronulla by Messrs Davies and Walker. Zooplankton were collected by Mr Middleton, and the samples weighed at Cronulla under the direction of Mr Tranter. The benthic grab and dredge were operated by Dr MacIntyre and Messrs Middleton and Purday. The camera was operated by Mr Purday who developed the films on board. Benthos samples were sorted and weighed at Cronulla by Dr MacIntyre, Mr Thomas, and Miss Jamil.

Cruise G3/62

R.J. MacIntyre (Cruise Leader)
R. Favelle
L. Olsen
C. Purday
R. Spaulding
C. Von der Borch, Department of Geology, University of Adelaide

The analyses of hydrological samples were done at Cronulla by Messrs Davies and Walker. Temperature observations were made aboard by Messrs Favelle and Olsen. Zooplankton were collected by Mr Spaulding, and samples weighed at Cronulla under the direction of Mr Tranter. The benthic grab was operated by Dr MacIntyre and Messrs Purday and Spaulding. The camera was operated by Mr Purday who developed the films on board. Benthos samples were sorted and weighed at Cronulla by Dr MacIntyre, Mr Thomas, and Miss Jamil. Sediment and Foraminifera samples were given to the Geology Department, University of New South Wales.

The data for both cruises were processed, under the direction of Mr Crooks, by Mrs Derrick, Mrs Tarbett, and Misses Johnston, Lalor, and Wanstall. Mr Kerr of the Division of

Mathematical Statistics, CSIRO, carried out statistical analyses of benthic biomass values. Track charts were prepared by Mr Breach.

II. WORK ACCOMPLISHED

Cruise G2/62

Eighty-four stations were worked (G2/54/62-G2/137/62). Surface hydrology samples were collected at 60 stations and subsurface samples at 34 stations. Zooplankton samples were taken at 31 stations. The orange-peel benthic grab was used at 35 stations and the dredge at 3 stations. The bottom camera was used at 24 stations.

TABLE 1

WORK DONE AT EACH STATION

Stn No.	Hydrology 1	Hydrology 2	Zooplankton	Grab	Camera	Dredge
54	+	4300				
55				+	+	
56			+	+	+	
57			+	+	+	
58				+	+	
59			+	+	+	
60			+	+	+	
61			+	+	+	
62			+	+	+	
63			+	+	+	
64				+*		
65			+	+*	+	
66				+*		
67			+	+*		
68				+		
69			+	+	+*	
70			+	+*		
71			+	+		
72			+	+*		
73			+			
74			+	+	+	
75			+	+*	+	
76			+	+		

Stn No.	Hydrology 1	Hydrology 2	Zooplankton	Grab	Camera	Dredge
77			+	+	+*	
78			+	+*		
79	+	25				
80	+	25				
81	+	75				
82	+	75				
83	+	100				
84	+	100				
85	+	1300				
86	+	1100				
87	+					
88	+	200	+	+*		
89	+	100	+	+	+	
90	+	75	+	+	+	
91	+	75				
92	+	75				
93	+	75				
94	+	100				
95	+	275	+	+*	+*	
96	+	130	+	+	+	
97	+	75	+	+	+	+
98	+					
99	+	45				
100	+	40				
101	+	45				
102	+	50				
103	+	50				
104	+	75	+	+	+	+
105	+	75	+	+	+	+
106	+	3300				
107	+	280	+	+*		
108	+	140	+	+	+*	
109	+	75	+	+	+	
110	+	3250	+			
111	+					
112	+					
113	+					
114	+	100				
115	+					
116	+					
117	+					
118	+					
119	+					
120	+	75				

Stn No.	Hydrology 1	Hydrology 2	Zooplankton	Grab	Camera	Dredge
121	+					
122	+					
123	+	75				
124	+					
125	+					
126	+					
127	+					
128	+			+	+	
129	+					
130	+					
131	+					
132	+					
133	+					
134	+					
135	+					
136	+					
137	+					

Hydrology 1 Surface

2 Surface to depth (m)

* Gear failed to operate

Cruise G3/62

Thirty-two stations were worked (G3/149/62-G3/180/62). Surface and subsurface hydrology samples were collected at 18 stations, and zooplankton samples at 16 stations. The benthic grab was used at 16 stations and bottom photographs were taken at 15 stations.

TABLE 2

WORK DONE AT EACH STATION

Stn No.	Hydrology Surface to Depth (m)	Zooplankton	Grab	Camera
149	50			
150	60	+	+	+
151		+	+*	+
152		+	+	+
153	1000			

Stn No.	Hydrology Surface to Depth (m)	Zooplankton	Grab	Camera
154	1100			
155				
156	1100			
157	1100			
158	100			
159	60			
160		+	+	+
161		+	+	+
162		+	+*	+
163	60			
164	75			
165	1100			
166	1100			
167	1100			
168	400			
169	50			
170	60	+	+	+
171	125	+	+	+
172		+	+*	+
173	700			
174		+	+*	
175		+	+	+
176		+	+	+
177		+	+	+
178		+	+*	+
179		+	+	+
180		+	+	+

* Gear failed to operate

III. METHOD OF COLLECTION AND ANALYSIS OF SAMPLES

1. Physics

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

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 using the Table of σ_t given by La Fond (1951).

2. Chemistry

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

Dissolved Oxygen.- A version of the standard Winkler method was used to determine the amount of dissolved oxygen in the seawater samples. The version used is a modification of that described 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 calculated by computer using the simpler of the equations given by Richards and Corwin (1956) -

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

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 automatically dispensed by a piston dispenser.

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

Total Phosphorus.- 100 ml samples were drawn from the Nansen bottles into 150 ml Pyrex conical flasks, 0.2 ml of 72% perchloric acid was added and digestion at 200°-250°C carried out immediately on a sand tray. After evaporation of water, heating was continued until fuming of the salt residue commenced. The samples were then allowed to cool and 100 ml of distilled water and 2 drops of 2% w/v phenolphthalein were added. If alkaline, perchloric acid was added until a slight acidity persisted. The flasks were allowed to stand for about 24 hr to allow the salts to dissolve. Phosphate was then determined as described above for inorganic phosphate. Results are given as µg-atom/l, without salt correction. To correct for salt effects, the results given can be multiplied by 1.15.

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

3. Zooplankton

Sampling consisted of oblique and double oblique tows, between surface and bottom, with a Clarke-Bumpus Sampler. Samples were weighed at Cronulla using the method described by Tranter (1962).

4. Benthos

Grab.- The grab employed for quantitative sampling of benthos was a 2 cu ft standard Hayward bucket, or "orange-peel", grab (CSIRO Aust. 1963). It was modified, by the addition of a gravity operated trip mechanism, to operate on a single wire. Interlocking plates of stainless steel were added to prevent the sediment from washing out through the top of the grab. Flexible steel cable of $1\frac{1}{2}$ in. circumference was passed from a

large steel winch through a radial davit on the port quarter of the ship so that the grab was worked over the stern and landed on the port side.

Sediment from the grab was discharged into cylindrical steel tubs of $22\frac{1}{2}$ in. diameter, and the depth of sediment measured. Representative sub-samples of raw sediment were removed for mineral and Foraminifera analyses. The bulk of the sediment was washed through a table of three sorting sieves (12.3, 5.5, and 1.5 mm apertures) into a box beneath (CSIRO Aust. 1963). The box retained sand particles, but silt and small animals were washed out into a fine (0.7 mm) sieve.

Mineral samples were stored in polythene bags without preservative. Foraminifera samples were stained with Rose Bengal and preserved with 70% alcohol in glass jars.

The collections of benthos were preserved in 10% formalin neutralised with hexamine. Small, delicate animals were first separated into plastic tubes, which were then added to the plastic bags containing larger specimens.

In the Laboratory, samples were sorted into groups and were weighed after excess formalin had been removed. Results are shown in Table 3.

At most stations several grab samples were taken and the resulting catches are expressed as weights per grab. While the orange peel grab is one of the most efficient digging samplers, it seldom delivered its maximum load of sediment due, no doubt, to variations in the nature of the bottom and the amount of sediment, particularly sand, that washed out of the grab. Ideally this instrument samples a square 0.25 m^2 in area to a depth of about 15 cm, so that a factor of four could be used to convert the figures shown to express catch per m^2, and in fact diving observations indicated that, in stiff sandy mud, the grab did leave a square hole of these dimensions, but more often the yield was smaller and averaged 1/5th of the total possible volume. Barnard and Jones (1959) noted that on hard sands a similar instrument sampled only half of the maximum area and yielded 1/6th of the total volume so that a factor of eight was required to express the catches in g/m^2. Until calibration experiments have been carried out, no factor is being related to the volume of sediment taken in order to express g/m^2; the factor required to make the conversion will probably be between four and eight.

Box Dredge.- Owing to the time consumed in multiple grab lowerings, the patchiness of the benthos, and variable losses of sediment from the grab, it was decided to test a large box dredge (MacIntyre 1964) which would accumulate bites of sediment from a depth of less than 10 cm. Both the dredge and orange peel grab were used at Stations 97, 104, and 105. However, at Station 105 the dredge load (maximum capacity) could not be landed because of faulty deck machinery.

The catch from the dredge can be expressed in terms of catch per volume of sediment instead of catch per alleged area of sampling as used for the grab. If necessary, the dredge can be calibrated against the grab.

The dredge was operated while the ship drifted. It was lowered to the bottom and a little extra cable paid out (about 5% of the depth) so that the dredge was towed with a very small wire angle and was lifted off the bottom with each wave. A strain gauge was used to follow this operation. In ten minutes the dredge was filled to its maximum capacity of 380 l. as compared with 56 l. for the orange peel grab.

Camera.- A Ewing suspended camera was used to take 18 photographs of the bottom at each of the stations indicated in Tables 1 and 2. The camera unit consisted of a "Robot" clockwork 35 mm camera in a watertight housing connected, through a plastic hose, to a Heiland-Honeywell "Strobonar" electronic flash unit in a separate housing. The camera was mounted above the flash unit on a pipe, and the trigger was released when a lead weight, hanging below the assembly, touched the bottom. The camera had several faults and was modified. The following faults developed while the camera was in use:-

1. The wide window of the flash housing was not sufficiently strong and it imploded, crushing the flash unit, at a depth of only 100 m. The faulty plastic cover was replaced with a gunmetal cover into which a smaller conical window of perspex was recessed.

2. The mechanical linkages, by which the trigger weight operated the camera button, required frequent adjustment.

3. As the open hose connection between the flash and camera housings was a flood hazard, electrical connections were carried through solid "Joy" connectors. Due to electrical leakage this in turn necessitated the use of a low voltage switching current in the camera circuit which operated the

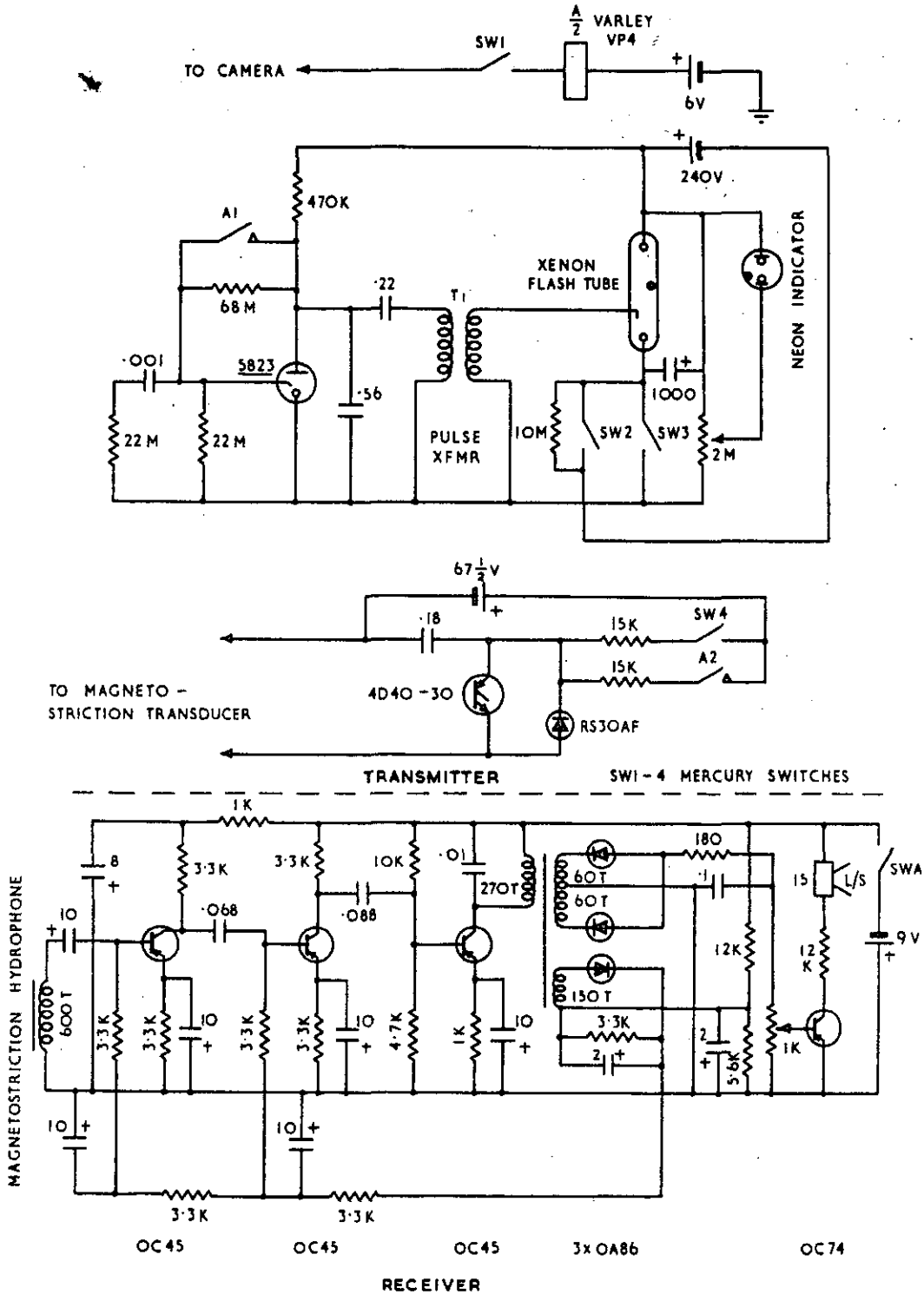

Fig. 3. Pinger and Receiver circuits

high voltage flash unit.

4. A small leak developed behind the glass of the camera housing. It was corrected by altering the shape of the "O"-ring seating.

5. The clockwork rewind mechanism of the "Robot" camera failed to advance the dry Plus-X film when it was first taken from the packet. If the cassette was humidified in a damp chamber, or even left out of its packet for 24 hr, the trouble ceased.

In order to determine the moment of contact of the camera with the sea-bed, and thus avoid dragging the camera on the bottom, a "pinger" was fitted to the flash unit and a hydrophone was trailed over the ship's side. When the trigger relay operated, the receiver emitted a high pitched squeal until the camera was raised off the bottom. The "pinger" and receiver (Fig. 3) were designed by Mr N.L. Brown, and assembled by Mr K. Richards.

Selected bottom photographs are shown in Figure 4. All photographs taken are filed at Cronulla.

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IV. DATA SHEETS

Hydrology data were processed in a C.D.C. 3600 Computer. Explanations of headings for each set of data sheets are given at the beginnings of the relevant parts.

DATA

PART 1

HYDROLOGY

SURFACE SAMPLING

EXPLANATION OF HEADINGS

Parts 1 and 2	Hydrology
STATION	Gives the station identification. For example, G2/54/62 signifies the 54th stat worked by Gascoyne in 1962, on her 2nd cruise for that year
DATE	Given as day/month/year
TIME	Given in Zone Time, and is the time at th beginning of the first cast. Zone times during the cruise were G.M.T. + 8, $9\frac{1}{2}$, an 10 hr, codes H, J, and K, respectively
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 dr 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 abov sea level, given in metres
CLOUD TYPE AMT.	Cloud type and amount are coded using Tab 2 and 3 in U.S. Hydrogr. Office (1955)
VIS.	Visibility is coded using Table 4 in U.S. Hydrogr. Office (1955)
SEA DIR. AMT.	Sea direction and amount are coded using Tables 5 and 8 in U.S. Hydrogr. Office (1955)
SWELL DIR. AMT.	Sea swell direction and amount are coded using Tables 6 and 8 in U.S. Hydrogr. Office (1955)

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 indicates no data available

CRUISE	STATION NUMBER	YR.	MTH.	DAY	TIME	Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND DIR.	WIND SP.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	WEATHER	BAROMETER	VISIBILITY
2	54	62	6	4	1845	K	34 01 S	153 05 E	19.8	35.62		2							7
2	55	62	6	18	1030	K	33 52 S	151 22 E			22	2	20	1	19	2		1025.3	7
2	56	62	6	18	1320	K	33 58 S	151 29 E			22	2							
2	57	62	6	18	1540	K	34 03 S	151 37 E			36	2							
2	58	62	6	19	1055	K	37 22 S	150 02 E			34	1							
2	59	62	6	19	1320	K	37 26 S	150 15 E			35	3							
2	60	62	6	19	1500	K	37 27 S	150 17 E			35	2							
2	61	62	6	20	0800	K	37 55 S	149 00 E			30	3	25	2	25	1	01	1017.0	7
2	62	62	6	20	1100	K	38 13 S	149 06 E			24	4	26	3	24	1	00	1015.0	8
2	63	62	6	20	1630	K	38 15 S	149 12 E			27	4	26	2	24	1	00	1013.5	8
2	64	62	6	21	0800	K	40 42 S	148 44 E			33	4	31	2	31	4	14	1010.0	6
2	65	62	6	21	0920	K	40 38 S	148 43 E			29	6	26	3	27	4	14	998.0	6
2	66	62	6	21	1215	K	40 37 S	148 39 E			29	6	28	2	27	4	14	998.0	6
2	67	62	6	22	1345	K	39 19 S	146 12 E			25	5	23	3	24	4	80	1019.0	7
2	68	62	6	23	0800	K	40 11 S	144 39 E			26	5	26	2	24	4	03	1026.0	7
2	69	62	6	23	1230	K	40 30 S	144 12 E			28	2	27	2	24	4	03	1023.4	8
2	70	62	6	23	1730	K	40 35 S	143 28 E			34	3	27	2	24	4	22	1023.0	7
2	71	62	6	24	0930	K	38 43 S	142 29 E			36	7	32	3	35	4	03	1015.0	7
2	72	62	6	24	1155	K	38 56 S	142 20 E			35	8	32	3	35	4	14	1014.0	7
2	73	62	6	24	1320	K	39 00 S	142 19 E			35	8	32	3	35	4	14	1013.0	5
2	74	62	6	25	0800	J	37 54 S	140 08 E			23	4	23	2	24	4	03	1021.3	7
2	75	62	6	25	1115	J	37 58 S	140 04 E			21	6	21	3	22	4	14	1015.0	7
2	76	62	6	26	0800	J	37 00 S	138 33 E			22	3	22	2	25	1	01	1033.8	7
2	77	62	6	26	0945	J	37 10 S	138 30 E			28	3	27	2	24	1	01	1034.5	7
2	78	62	6	26	1200	J	37 12 S	138 30 E			28	3	29	2	27	1	02	1034.5	7
2	79	62	7	2	1700	J	35 15 S	137 55 E	14.5	36.63	30	3	30	3	30	1		1029.0	7
2	80	62	7	2	2155	J	35 29 S	136 53 E	15.6	36.08	29	4	29	3	30	1		1027.5	7
2	81	62	7	3	0015	J	35 31 S	136 28 E	16.5	36.02	27	4	26	2	28	1		1024.0	7
2	82	62	7	3	0342	J	35 30 S	136 03 E	16.9	35.90	24	4	25	3	26	1		1026.0	7
2	83	62	7	3	0714	J	35 25 S	135 22 E	17.2	35.94	22	5	23	2	24	2		1025.5	7
2	84	62	7	3	0955	J	35 23 S	134 51 E	17.0	35.81	21	4	22	3	23	2		1027.5	7
2	85	62	7	3	1320	J	35 20 S	134 20 E	15.0	35.45	20	4	25	2	23	2		1028.5	7
2	86	62	7	3	2240	J	34 55 S	132 35 E	17.2	35.72	24	3	23	2	20	2		1032.0	7
2	87	62	7	4	0200	J	34 35 S	132 25 E		35.82	21	3	21	2	20	1	02	1032.0	7
2	88	62	7	4	0917	J	33 39 S	131 53 E	17.7	35.74	16	3			21	2		1032.2	7
2	89	62	7	4	1135	J	33 35 S	131 48 E	17.7	35.76	16	2			20	2		1033.5	7
2	90	62	7	4	1630	J	32 42 S	131 27 E	17.5	35.98	09	3			19	2		1031.0	8
2	91	62	7	4	1750	J	32 36 S	131 27 E	17.5	36.10	10	3			18	2		1032.5	8
2	92	62	7	4	2115	J	32 48 S	130 50 E	17.4	35.99	16	3	16	1	20	3		1032.0	7
2	93	62	7	5	0045	J	33 00 S	130 10 E	17.4	35.84	16	3	17	1	21	2		1032.0	7
2	94	62	7	5	0415	J	33 15 S	129 27 E	17.7	35.78	17	3			20	2		1032.2	7
2	95	62	7	5	0905	J	33 24 S	128 46 E	17.8	35.78	14	2	14	1	19	2		1033.0	7

CRUISE	STATION NUMBER	YR.	MTH.	DAY	TIME	Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND		SEA		SWELL		WEATHER	BAROMETER	VISIBILITY
											DIR.	SP.	DIR.	AMT.	DIR.	AMT.			
2	96	62	7	5	1052	J	33 20 S	128 45 E	17.9	35.72	12	2			16	2		1034.0	7
2	97	62	7	5	1345	J	33 05 S	128 40 E	17.5	35.84	14	2	13	1	19	2		1033.0	7
2	98	62	7	5	1710	J	32 30 S	128 27 E		36.04	12	3			13	1	01	1032.5	8
2	99	62	7	5	1808	J	32 24 S	128 21 E	16.9	36.02	13	3			13	1		1033.0	7
2	100	62	7	6	1052	J	32 30 S	127 37 E	16.7	36.14	02	3	02	2	05	1		1031.6	7
2	101	62	7	6	1356	J	32 37 S	126 59 E	16.8	36.09	01	2	02	1	20	2		1027.5	7
2	102	62	7	6	1730	J	32 43 S	126 12 E	17.2	35.92	05	2			08	1		1026.0	8
2	103	62	7	7	1100	J	33 14 S	125 30 E	17.3	35.87	30	4	30	2	34	1		1021.0	8
2	104	62	7	7	1525	J	33 43 S	125 04 E	17.7	35.78	31	3	31	2	22	1		1017.0	8
2	105	62	7	8	1200	J	34 13 S	125 04 E	18.1	35.74	22	4	22	2	20	2		1018.0	7
2	106	62	7	8	1635	J	34 32 S	124 45 E	15.8	35.55	23	7	23	3	22	3		1018.1	7
2	107	62	7	9	1152	J	34 33 S	121 32 E	18.3	35.70	01	3	02	2	15	2		1015.5	7
2	108	62	7	9	1345	J	34 32 S	121 31 E	18.2	35.69	03	5	04	3	18	1		1011.5	7
2	109	62	7	9	1633	J	34 21 S	121 16 E	17.5	35.67	04	6	03	3	19	1		1011.5	7
2	110	62	7	11	0250	J	34 15 S	128 48 E	16.0	35.79	04	6	04	2	05	3	01	1010.0	7
2	111	62	7	11	1800	J	33 57 S	131 41 E		35.61	02	6	03	3	05	4	01	1012.0	8
2	112	62	7	11	2000	J	33 52 S	132 12 E		35.61	05	6	05	3	05	4	00	1012.0	7
2	113	62	7	11	2100	J	33 51 S	132 24 E		35.75	05	6	05	3	05	4	00	1012.0	7
2	114	62	7	11	2219	J	33 49 S	132 38 E	17.0	35.97	05	6	05	3	05	3	01	1012.5	7
2	115	62	7	11	2300	J	33 48 S	132 47 E		35.90	05	5	05	3	05	4	01	1012.5	7
2	116	62	7	12	0001	J	33 47 S	133 02 E		36.08	05	5	05	3	05	4	01	1013.0	7
2	117	62	7	12	0100	J	33 46 S	133 16 E		36.13	05	4	05	2	05	1	01	1013.0	7
2	118	62	7	12	0200	J	33 44 S	133 29 E		36.27	05	4	04	2	04	1	01	1013.4	7
2	119	62	7	12	0301	J	33 51 S	133 32 E		36.26	05	4	05	2	04	2	01	1013.4	7
2	120	62	7	12	0400	J	34 02 S	133 38 E	16.9	36.38	05	4	05	2	04	2	01	1013.5	7
2	121	62	7	12	0500	J	34 12 S	133 44 E		36.11	04	4	05	2	06	1	01	1013.5	8
2	122	62	7	12	0600	J	34 23 S	133 50 E		35.99	04	4	05	2	06	1	01	1013.5	8
2	123	62	7	12	0655	J	34 34 S	133 56 E	17.2	36.00	03	4	03	2	05	2	01	1013.5	7
2	124	62	7	12	0800	J	34 43 S	134 00 E		35.86	03	4	05	2	05	1	01	1014.5	7
2	125	62	7	12	0900	J	34 53 S	134 08 E		35.64	03	4	05	2	05	1	01	1014.5	9
2	126	62	7	12	1000	J	35 02 S	134 17 E		35.61	04	4	05	2	06	1	01	1012.0	9
2	127	62	7	12	1100	J	35 13 S	134 24 E		35.71	04	3	05	2	07	1	01	1012.0	9
2	128	62	7	12	1200	J	35 15 S	134 32 E		35.68	04	3	04	2	07	1	01	1012.0	9
2	129	62	7	12	1416	J	35 19 S	134 45 E		35.70	07	3	07	2	25	1	01	1016.0	8
2	130	62	7	12	1500	J	35 20 S	134 54 E		35.93									
2	131	62	7	12	1600	J	35 22 S	135 09 E		35.73									
2	132	62	7	12	1700	J	35 25 S	135 25 E		35.81									
2	133	62	7	12	1800	J	35 27 S	135 40 E		35.77									
2	134	62	7	12	1900	J	35 30 S	135 55 E		35.91									
2	135	62	7	12	2000	J	35 31 S	136 08 E		35.97									
2	136	62	7	12	2100	J	35 32 S	136 22 E		35.95									
2	137	62	7	12	2200	J	35 32 S	136 34 E		35.97									

CRUISE	STATION NUMBER	YR.	MTH.	DAY	TIME	Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND DIR.	WIND SP.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	WEATHER	BAROMETER	VISIBILITY
3	149	62	8	7	0611	H	34 43 S	119 00 E	18.1	35.62	29	3	28	2	20	4		1020	7
3	150	62	8	7	0817	H	34 55 S	119 00 E	18.0	35.71	31	3	31	2	21	4	00	1021	8
3	151	62	8	7	0915	H	34 58 S	119 01 E			28	4	28	2	23	4	00	1021	
3	152	62	8	7	1030	H	34 58 S	119 03 E			29	4	28	2	23	1	00	1022	
3	153	62	8	7	1259	H	35 10 S	119 00 E	18.4	35.64	26	3	24	2	19	4	52	1022	7
3	154	62	8	7	1526	H	35 30 S	119 00 E	17.9	35.62	22	3	22	2	22	4	00	1022	7
3	155	62	8	7	1830	H	35 47 S	118 37 E											
3	156	62	8	7	2034	H	36 00 S	118 12 E		35.55	29	4	29	2	22	4		1021	7
3	157	62	8	7	2312	H	35 40 S	118 12 E	14.3	35.43	26	4	26	2	22	4	03	1022	7
3	158	62	8	8	0122	H	35 20 S	118 19 E	18.4	35.61	26	3	26	2			52	1022	7
3	159	62	8	8	0228	H	35 12 S	118 19 E	18.4	35.64		1					00	1022	7
3	160	62	8	8	0830	H	35 12 S	117 00 E			26	2	00	0	24	1	60	1021	
3	161	62	8	8	1635	H	35 25 S	117 00 E				1			21	1	00	1021	
3	162	62	8	8	1445	H	35 25 S	117 01 E				1			22	4	00	1021	
3	163	62	8	8	1847	H	35 12 S	117 00 E	18.5	35.59		1			21	1	00	1022	8
3	164	62	8	8	2007	H	35 25 S	117 00 E	18.8	35.64		1			21	1	00	1022	7
3	165	62	8	8	2142	H	35 40 S	117 00 E	14.6	35.46		1			21	1	00	1022	7
3	166	62	8	9	0003	H	36 00 S	117 00 E	15.9	35.57		1			22	1	00	1022	7
3	167	62	8	9	0558	H	35 30 S	115 50 E	15.9	35.61	04	1			22	1	01	1020	7
3	168	62	8	9	0800	H	35 15 S	115 55 E	17.3	35.61		1			24	1	50	1023	7
3	169	62	8	9	0939	H	35 00 S	116 00 E	19.0	35.61		1			24	1	52	1022	7
3	170	62	8	9	1452	H	34 32 S	115 01 E	19.3	35.59		1			24	1	00	1017	9
3	171	62	8	9	1654	H	34 41 S	114 56 E	18.9	35.73	21	2	21	1	20	1	00	1016	7
3	172	62	8	9	1900	H	34 48 S	114 50 E				1			20	1	00	1017	
3	173	62	8	9	2051	H	34 55 S	114 45 E	17.4	35.79		1			24	1	00	1018	7
3	174	62	8	10	0930	H	32 50 S	114 38 E			32	4	32	2	24	4	00	1014	
3	175	62	8	10	1100	H	33 03 S	114 44 E			32	4	32	3	24	4	00	1014	
3	176	62	8	10	1245	H	33 09 S	114 49 E			32	4	33	2	25	1	00	1011	
3	177	62	8	11	0615	H	31 33 S	115 12 E			20	6	21	2	23	4	52	1015	
3	178	62	8	11	0900	H	31 33 S	115 07 E			21	6	21	3	24	4	52	1015	
3	179	62	8	11	1500	H	30 45 S	114 52 E			12	5	18	2	20	4	00	1018	
3	180	62	8	11	1610	H	30 45 S	114 51 E			19	4	20	2	21	4	52	1018	

DATA

PART 2

HYDROLOGY

DEEP STATIONS

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/54/62	4/6/62	1845 K	34 01 S	153 05 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
4790				2	16	0	6	7								

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	19.83	35.616	25.29	4.61	92	0.23	0.31	0.0
2	24	19.84	35.626	25.30	4.90	98	0.21		0.2
2	46	19.83	35.626	25.30	4.98	100	0.27	0.33	0.2
2	69	19.83	35.625	25.30	4.84	97	0.23		0.2
2	92	19.85	35.626	25.30	4.90	98	0.23	0.33	0.1
2	138	18.91	35.687	25.59	4.42	87	0.35		0.5
2	185	17.77	35.619	25.82	4.32	83	0.45	0.55	3.1
2	279	14.75			4.31		0.77		7.4
2	470	10.51	34.875	26.78	4.55	75	1.07		14.2
2	664	8.04	34.588	26.96	4.56	71	1.42	1.43	20.8
2	856	6.39	34.482	27.11	4.33	64	1.62	1.67	25.8
2	1051	5.09	34.461	27.26	4.08	59	1.74	1.94	30.3
1	1242	4.07	34.508	27.41	3.80	53	1.85	2.10	32.3
1	1433	3.35	34.561	27.52	3.59	49	2.07	2.06	32.4
1	1910	2.42	34.662	27.69	3.69	49	1.94	1.98	31.9
1	2388	2.02	34.721	27.77	4.10	54	1.83	1.91	31.9
1	2865	1.62	34.728	27.80	4.31	56	1.83	1.94	29.8
1	3342	1.27	34.724	27.83	4.34	56	1.88		31.6
1	3820	1.17	34.722	27.83	4.42	57	1.89	2.01	31.3
1	4298	1.18	34.718	27.83	4.51	58	1.76	1.98	31.9

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/79/62	2/7/62	1700 J	35 15 S	137 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
37	14.4	15.0	30	3	16	8	3	7	30	3	30	1	1029.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	14.50	36.628	27.35	5.69	103	0.11	0.52	0.0
1	25	14.43	36.687	27.41	5.52	100	0.13	0.54	0.2

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/80/62	2/7/62	2155 J	35 29 S	136 53 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
53	13.9	15.0	29	4	16	8	4	7	29	3	30	1	1027.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	15.65	36.080	26.68	5.58	103	0.21	0.54	0.1
1	25	15.68	36.068	26.66	5.52	102	0.23	0.54	0.0

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/81/62	3/7/62	0015 J	35 31 S	136 28 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
91	14.4	16.1	27	4	16			7	26	2	28	1	1024.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	16.52	36.022	26.43	5.35	101	0.25		0.2
1	25	16.54	36.029	26.43	5.42	102	0.24		0.5
1	50	16.56	36.017	26.42	5.23	99	0.28		0.7
1	75	16.44	36.007	26.44	5.40	102	0.34		0.2

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/82/62	3/7/62	0342 J	35 30 S	136 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
102	13.3	15.6	24	4	16	8	3	7	25	3	26	1	1026.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	16.88	35.903	26.25	5.35	101	0.11		0.1
1	25	16.88	35.899	26.25	5.40	102	0.12		0.1
1	50	16.92	35.923	26.26	5.35	101	0.11		0.2
1	75	16.95	35.973	26.29	5.29	100	0.16		0.1

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/83/62	3/7/62	0714 J	35 25 S	135 22 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
123	13.9	15.0	22	5	16	6	8	7	23	2	24	2	1025.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.17	35.942	26.21	5.34	102	0.09	0.37	0.2
1	25	17.20	35.957	26.22	5.34	102	0.09	0.38	0.1
1	50	17.26	35.998	26.23	5.29	101	0.10	0.43	0.3
1	75	17.29	36.026	26.25	5.34	102	0.16	0.44	0.1
1	100	17.28	36.077	26.29	5.31	102	0.26	0.42	0.3

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/84/62	3/7/62	0955 J	35 23 S	134 51 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
130	12.8	14.4	21	4	16	6	7	7	22	3	23	2	1027.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	16.99	35.814	26.16	5.23	99	0.15		0.3
1	25	17.02	35.815	26.15	5.29	100	0.22		0.2
1	50	17.03	35.774	26.12	4.65	88	0.18		0.4
1	75	17.04	35.827	26.16	5.23	99	0.19		0.2
1	100	17.03	35.816	26.15	5.05	96	0.15		0.3

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/85/62	3/7/62	1320 J	35 20 S	134 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
1646	10.6	13.9	20	4	16	8	4	7	25	2	23	2	1028.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	15.05	35.454	26.33	5.63	103	0.15		0.4
1	25	15.10	35.445	26.31	5.69	104	0.23		0.1
1	50	15.08	35.438	26.31	5.58	102	0.23		0.2
1	75	14.95	35.421	26.33	5.69	103	0.30		0.2
1	100	14.91	35.405	26.32	5.58	101	0.31		0.1
1	150	14.77	35.423	26.37	5.63	102	0.34		0.3
1	200	13.54	35.246	26.49	5.46	96	0.42		1.6
1	300	11.31	35.011	26.75	5.23	88	0.63		5.8
1	500	8.81	34.661	26.90	5.69	90	0.99		12.4
1	700	7.96	34.567	26.96	5.17	80	1.27		17.1
1	900	5.48	34.433	27.19	4.18	61	1.44		22.2
1	1100	3.48	34.443	27.42	4.18	58	1.69		24.9
1	1300	2.99	34.528	27.53	3.95	54	1.81		28.4

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/86/62	3/7/62	2240 J	34 55 S	132 35 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
1244	12.8	13.3	24	3	16	8	8	7	23	2	20	2	1032.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.18	35.724	26.04	5.23	100	0.23	0.44	0.5
1	25	17.23	35.755	26.06	5.29	101	0.31	0.45	0.3
1	50	17.26	35.764	26.06	5.17	99	0.27	0.51	0.6
1	75	17.24	35.759	26.06	5.17	99	0.28	0.47	0.4
1	100	17.33	35.797	26.06	5.17	99	0.26	0.50	0.4
1	150	17.37	35.811	26.06	5.23	100	0.30	0.51	0.3
1	200	17.48	35.854	26.07	5.11	98	0.31	0.55	0.5
1	300	13.54	35.294	26.53	4.82	85	0.57	0.58	2.5
1	500	9.66	34.788	26.86	5.46	88	1.06	1.13	11.4
1	700	8.32	34.605	26.94	5.23	82	1.34	1.69	17.0
1	900	5.40	34.417	27.19				1.72	23.9
1	1100	3.32	34.457	27.44	3.95	54	2.06	1.76	28.0

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/88/62	4/7/62	0917 J	33 39 S	131 53 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
298	13.3	15.6	16	3	16	6	7	7			21	2	1032.2			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.69	35.745	25.94	5.05	97	0.19		0.6
1	25	17.63	35.774	25.97	5.34	103	0.21		0.6
1	50	17.63	35.774	25.97	5.23	101	0.34		0.5
1	75	17.62	35.774	25.98	5.17	99	0.30		0.5
1	100	17.63	35.774	25.97	5.23	101	0.32		0.6
1	150	17.13	35.744	26.07	5.17	98	0.40		0.4
1	200	16.98	35.679	26.06	5.29	100	0.34		0.3

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/89/62	4/7/62	1135 J	33 35 S	131 48 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
155	12.2	15.0	16	2	16	6	8	7			20	2	1033.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.65	35.762	25.96	5.17	99	0.15	0.38	0.1
1	25	17.62	35.782	25.98	5.17	99	0.16	0.35	0.1
1	50	17.61	35.780	25.98	5.17	99	0.20	0.36	0.2
1	75	17.63	35.780	25.98	5.23	101	0.15	0.39	0.1
1	100	17.61	35.779	25.98	5.17	99	0.19	0.35	0.3

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/90/62	4/7/62	1630 J	32 42 S	131 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
79	15.6	17.8	09	3	16	6	3	8			19	2	1031.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.53	35.981	26.16	5.35	103	0.22		0.3
1	25	17.50	36.017	26.19			0.15		0.3
1	50	17.61	36.130	26.25	4.94	95	0.23		0.4
1	75	17.65	36.175	26.28	5.06	98	0.22		0.3

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/91/62	4/7/62	1750 J	32 36 S	131 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
77	13.9	15.6	10	3	16	6	6	8			18	2	1032.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.53	36.100	26.25	5.46	105	0.03	0.24	0.3
1	25	17.43	36.098	26.27	5.40	104	0.07	0.24	0.3
1	50	17.55	36.213	26.33	5.06	97	0.07	0.32	0.3
1	75	17.46	36.353	26.46	5.06	97	0.10	0.41	0.2

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/92/62	4/7/62	2115 J	32 48 S	130 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
82	13.3	15.6	16	3	16	8	6	7	16	1	20	3	1032.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.42	35.991	26.19	5.29	101	0.05	0.89	0.3
1	25	17.38	36.040	26.24	5.23	100	0.07	0.72	0.2
1	50	17.35	36.044	26.25	4.89	94	0.12	0.58	0.4
1	75	17.35	36.132	26.32	5.23	100	0.13	1.05	0.4

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/93/62	5/7/62	0045 J	33 00 S	130 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
90	12.2	15.6	16	3	16	8	7	7	17	1	21	2	1032.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.41	35.839	26.08	5.35	102	0.13		0.1
1	25	17.39	35.888	26.12	5.23	100	0.23		0.4
1	50	17.39	35.898	26.13	5.29	101	0.17		0.2
1	75	17.38	35.915	26.14	5.29	101	0.24		0.2

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/94/62	5/7/62	0415 J	33 15 S	129 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
124	10.6	14.4	17	3	16	6	2	7	20	2	1032.2					

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.68	35.778	25.96	5.29	102	0.27		0.3
1	25	17.57	35.776	25.99	5.29	102	0.24		0.2
1	50	17.56	35.810	26.02	5.23	100	0.22		0.1
1	75	17.58	35.841	26.04	5.23	100	0.19		0.2
1	100	17.57	35.906	26.09	5.12	98	0.24		0.2

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/95/62	5/7/62	0905 J	33 24 S	128 46 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
293	12.2	15.0	14	2	16	6	7	7	14	1	19	2	1033.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.77	35.785	25.95	5.35	103	0.09		0.1
1	25	17.78	35.760	25.93	5.29	102	0.10		0.1
1	50	17.78	35.750	25.92	5.29	102	0.08		0.1
1	75	17.66	35.739	25.94	5.23	101	0.12		0.0
1	100	17.52	35.742	25.98	5.23	100	0.12		0.1
1	150	17.17	35.711	26.04	5.29	101	0.15		0.2
1	200	15.86	35.490	26.17	5.52	102	0.17		0.2
1	275	12.39	35.142	26.64	5.29	91	0.47		4.5

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/96/62	5/7/62	1052 J	33 20 S	128 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
137	12.8	16.1	12	2	16	6	7	7			16	2	1034.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.86	35.719	25.87	5.29	102	0.10	0.22	0.0
1	25	17.81	35.745	25.91	5.17	100	0.11	0.27	0.4
1	50	17.67	35.728	25.93	5.12	98	0.12	0.27	0.3
1	75	17.56	35.724	25.95	5.35	103	0.13	0.31	0.4
1	100	17.48	35.747	25.99	5.29	101	0.15	0.36	0.1
1	130	17.40	35.818	26.06	5.12	98	0.11	0.41	0.5

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/97/62	5/7/62	1345 J	33 05 S	128 40 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
75	13.3	16.7	14	2	16	6	2	7	13	1	19	2	1033.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.51	35.841	26.05	5.23	100	0.15		0.0
1	25	17.36	35.867	26.11	5.00	96	0.13		0.3
1	50	17.52	35.989	26.16	4.25	82	0.21		0.5
1	75	17.52	35.998	26.17	4.89	94	0.26		0.5

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/99/62	5/7/62	1808 J	32 24 S	128 21 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
48	13.9	15.6	13	3	16	6	3	7			13	1	1033.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	16.87	36.017	26.34	5.52	105	0.08	0.32	0.1
1	25	16.76	36.150	26.47	5.46	103	0.12	0.43	0.0
1	45	16.84	36.085	26.40	5.29	100	0.20	0.44	0.1

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/100/62	6/7/62	1052 J	32 30 S	127 37 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
44	12.8	15.0	02	3	16			7	02	2	05	1	1031.6			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	16.66	36.138	26.49	5.58	105	0.09		0.0
1	25	16.62	36.144	26.50	5.46	103	0.12		0.0
1	40	16.48	36.349	26.69	5.29	100	0.16		0.0

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/101/62	6/7/62	1356 J	32 37 S	126 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
48	10.6	17.2	01	2	16			7	02	1	20	2	1027.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	16.84	36.086	26.40	5.23	99	0.11	0.79	0.2
1	25	16.67	36.080	26.44	5.23	99	0.16	0.61	0.0
1	43	16.68	36.092	26.45	5.23	99	0.19	0.52	0.1

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/102/62	6/7/62	1730 J	32 43 S	126 12 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
55	13.9	17.2	05	2	16			8			08	1	1026.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.22	35.916	26.18	5.35	102	0.09	0.27	0.0
1	25	16.94	35.955	26.28	5.29	100	0.10	0.29	0.0
1	50	16.85	35.999	26.33	5.06	96	0.12	0.51	0.0

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/103/62	7/7/62	1100 J	33 14 S	125 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
58	12.8	16.1	30	4	16			8	30	2	34	1	1021.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.28	35.872	26.13	5.23	100	0.20		0.0
1	25	17.23	35.864	26.14	5.29	101	0.20		0.0
1	50	17.25	35.865	26.14	5.29	101	0.20		0.0

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/104/62	7/7/62	1525 J	33 43 S	125 04 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
76	15.0	20.0	31	3	16	5	2	8	31	2	22	1	1017.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.69	35.778	25.96	5.23	101	0.16		0.0
1	25	17.69	35.778	25.96	5.29	102	0.24		0.2
1	50	17.69	35.783	25.97	5.17	99	0.32		0.1
1	75	17.65	35.799	25.99	5.12	98	0.34		0.1

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/105/62	8/7/62	1200 J	34 13 S	125 04 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
99	12.8	15.0	22	4	16	5	6	7	22	2	20	2	1018.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.11	35.736	25.83	5.23	101	0.11		0.0
1	25	18.14	35.729	25.81	5.17	100	0.11		0.2
1	50	18.15	35.725	25.81	5.17	100	0.13		0.2
1	75	18.14	35.728	25.81	5.23	101	0.13		0.1
1	95	18.14	35.732	25.81	5.17	100	0.12		0.3

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/106/62	8/7/62	1635 J	34 32 S	124 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
3658	13.3	15.0	23	7	16	5	4	7	23	3	22	3	1018.1			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	15.80	35.550	26.23	5.29	98	0.06	0.53	0.1
2	24	15.85	35.567	26.24	5.35	99	0.22	0.52	0.1
2	47	15.81	35.561	26.24	5.17	96	0.22	0.53	0.2
2	70	15.42	35.507	26.29	5.52	101	0.23	0.58	0.1
2	94	14.82	35.389	26.33	5.40	98	0.26	0.58	0.2
2	141	14.65	35.388	26.37	5.46	99	0.25	0.65	0.2
2	189	13.30	35.258	26.55	5.12	90	0.36	0.66	3.3
2	284	11.13	34.969	26.75	5.29	88	0.47	0.79	1.8
2	473	9.11	34.701	26.89	5.52	88	0.96	1.17	13.3
2	662	8.37	34.605	26.93	5.23	82	1.05	1.42	16.4
2	851	6.24	34.433	27.10	4.20	62	1.55	1.69	24.6
2	1040	3.95	34.403	27.34	4.31	60	1.80	2.05	27.9
1	1230	3.32	34.540	27.51	4.02	55	1.94	2.36	27.2
1	1420	2.83	34.454	27.49	3.28	44	1.55	2.17	26.2
1	1895		34.683		3.40		1.76	2.62	29.2
1	2365	2.06	34.727	27.77	3.39	45	1.78	2.20	28.2
1	2840	1.83	34.740	27.80	4.20	55	1.95	2.12	27.2
1	3310	1.47	34.730	27.82	4.37	57	1.82	1.97	28.5

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/107/62	9/7/62	1152 J	34 33 S	121 32 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
293	10.0	12.8	01	3	16			7	02	2	15	2	1015.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.27	35.701	25.76	5.29	103	0.15	0.55	0.0
1	25	18.19	35.702	25.78	5.29	103	0.19	0.65	0.0
1	50	16.43	35.625	26.15	5.46	102	0.29	0.70	0.1
1	75	16.04	35.594	26.21	5.40	100	0.27	0.70	0.1
1	100	15.94	35.582	26.23	5.40	100	0.33	0.73	0.1
1	150	15.85	35.569	26.24	5.46	101	0.30	0.74	0.1
1	200	15.66	35.539	26.26	5.46	101	0.34	0.74	0.1
1	250	14.37	35.354	26.40	5.34	96	0.40	0.82	1.3
1	280	13.98	35.307	26.45	5.40	96	0.42	0.85	2.0

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/108/62	9/7/62	1345 J	34 32 S	121 31 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
293	11.7	15.0	03	5	16			7	04	3	18	1	1011.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.24	35.688	25.76	5.05	98	0.15		0.1
1	25	18.29	35.701	25.75	5.11	99	0.16		0.0
1	50	16.60	35.599	26.09	5.05	95	0.19		0.3
1	75	16.03	35.593	26.21	5.46	102	0.29		0.1
1	100	15.80	35.578	26.26	5.29	98	0.33		0.1
1	140	15.76	35.550	26.40	5.40	100			0.1

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/109/62	9/7/62	1633 J	34 21 S	121 16 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
79	11.7	15.0	04	6	16			7	03	3	19	1	1011.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.55	35.672	25.91	5.46	105	0.22		0.3
1	25	17.33	35.660	25.96	5.23	100	0.23		0.2
1	50	17.24	35.661	25.98	5.23	100	0.24		0.3
1	75	17.17	35.658	26.00	5.34	102	0.33		0.0

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/110/62	11/7/62	0250 J	34 15 S	128 48 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
3640	12.8	17.2	04	6	16			7	04	2	05	3	1010.0			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	16.01	35.790*	26.37	5.41	101	0.26	0.22	0.3
2	24	16.05	35.620*	26.23	5.29	98	0.31	0.26	0.2
2	48	16.07	35.610*	26.22	5.07	94	0.30	0.26	0.3
2	73	16.03	35.610*	26.23	5.35	99	0.30	0.30	0.3
2	97	16.05	35.620*	26.23	5.24	97	0.33	0.32	0.4
2	144	16.01	35.700*	26.30	5.29	98	0.37	0.31	0.1
2	193	13.63	35.300*	26.51	5.12	90	0.52	0.43	0.3
2	290	11.34	35.030*	26.76	5.12	86	0.74	0.73	6.1
2	484	9.01	35.030*	27.16	5.41	86			13.0
2	678	8.40	34.630*	26.94	5.07	79	1.24	1.21	17.5
2	871	5.72	34.450*	27.17	4.21	61	1.37	1.59	22.6
2	1065	3.90	34.420*	27.36	4.21	59	1.96		27.2
1	1237	3.11	34.510*	27.51	3.81	52	2.20		29.0
1	1427	2.73	34.560*	27.58	3.53	48		1.90	29.8
1	1903	2.35	34.690*	27.72	3.70	49	1.99		28.0
1	2380	2.06	34.720*	27.76	3.70	49	1.96	1.99	27.9
1	2855	1.81	34.760*	27.82	4.10	54		2.17	28.0
1	3235	1.49	34.690*	27.78	4.21	55	2.31		26.4

* PROPERTY DOUBTFUL

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/114/62	11/7/62	2219 J	33 49 S	132 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
114	14.4	17.2	05	6	16	1	2	7	05	3	05	3	1012.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.03	35.970*	26.27	5.24	100			0.0
1	25	17.07	35.930*	26.23	5.29	101			0.1
1	50	17.06	35.950*	26.25	5.29	101			0.0
1	75	17.27	36.130*	26.33	5.18	99			0.1
1	100	17.49	36.290*	26.40	5.07	98			0.2

* PROPERTY DOUBTFUL

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/120/62	12/7/62	0400 J	34 02 S	133 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
90	13.3	16.1	05	4	16	5	2	7	05	2	04	2	1013.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	16.93	36.380*	26.61	5.07	97			0.3
1	25	16.97	36.360*	26.58	5.12	98			0.3
1	50	16.98	36.380*	26.59	4.89	93			0.2
1	75	16.97	36.400*	26.61	5.12	98			0.3

* PROPERTY DOUBTFUL

STATION	DATE	TIME	LATITUDE	LONGITUDE
G2/123/62	12/7/62	0655 J	34 34 S	133 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
102	13.3	15.6	03	4	16	5	4	7	03	2	05	2	1013.5			

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.17	36.000*	26.26	5.12	98			0.1
1	25	17.17	36.060*	26.30	5.24	100			0.0
1	50	17.25	36.130*	26.34	5.12	98			0.1
1	75	17.23	36.110*	26.33	5.24	100			0.2

* PROPERTY DOUBTFUL

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/149/62	7/8/62	0611 H	34 43 S	119 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
64	12.8	14.4	29	03	16	6	6	7	28	2	20	4	1020.2	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.11	35.620	25.73	5.18	100			
1	10	18.12	35.610	25.73	5.22	101			
1	20	18.13	35.610	25.72	5.22	101			
1	30	18.11	35.620	25.73	5.21	100			
1	40	18.07	35.610	25.73	5.19	100			
1	50	18.07	35.610	25.73	5.18	100			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/150/62	7/8/62	0817 H	34 55 S	119 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
75	13.3	13.9	31	3	16	6	6	8	31	2	21	4	1021.3	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.05	35.710	25.81	5.17	100			
1	10	17.98	35.700	25.82	5.20	100			
1	20	18.01	35.680	25.80	5.09	98			
1	30	18.03	35.690	25.81	5.20	101			
1	40	18.00	35.700	25.82	5.08	98			
1	50	17.99	35.700	25.82	5.15	99			
1	60	18.04	35.710	25.82	5.19	100			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/153/62	7/8/62	1259 H	35 10 S	119 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
878	14.4	15.6	26	03	16	8	6	7	24	2	19	4	1022.0	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.36	35.640	25.68	5.22	101			
1	23	18.23	35.700	25.76	5.16	100			
1	46	18.06			5.16				
1	68	18.00	35.620	25.76	5.22	100			
1	91	17.73	35.620	25.82	5.17	99			
1	137	17.34	35.700	25.98	5.19	99			
1	183	17.17	35.680	26.00	5.23	99			
1	457	10.92	34.920	26.74	5.39	89			
1	639	8.93	34.630	26.86	5.58	88			
1	822	6.78	34.490	27.06	4.63	69			
1	1005	4.06	34.430	27.34	4.31	60			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/154/62	7/8/62	1526 H	35 30 S	119 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
3840	13.3	15.0	22	03	16	6	4	7	22	2	22	4	1022.0	5		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.86	35.620	25.79	5.23	100			
1	25	17.65	35.640	25.86	5.20	99			
1	50	17.42	35.750	26.00	5.28	100			
1	75	17.28	35.710	26.00	5.22	99			
1	100	16.55	35.640	26.12	5.23	98			
1	150	15.26	35.500	26.31	5.35	97			
1	200	15.05	35.390	26.27	5.35	97			
1	300	11.93	35.070	26.67	5.35	90			
1	500	9.31	34.670	26.82	5.55	88			
1	700	8.54	34.600	26.89	5.38	84			
1	900	5.88	34.430	27.14	4.55	66			
1	1100	3.98	34.380	27.31	4.32	60			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/156/62	7/8/62	2034 H	36 00 S	118 12 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
4114	12.8	13.9	29	4	16	8	7	7	29	2	22	4	1021.9	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0		35.550		5.54				
1	25		35.520		5.60				
1	50		35.520		5.54				
1	75		35.620		5.55				
1	100		35.500		5.42				
1	150		35.170		5.39				
1	200		35.170		5.34				
1	300		34.780		5.57				
1	500		34.630		5.56				
1	700		34.580		5.12				
1	900		34.380		4.49				
1	1100		34.380		4.19				

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/157/62	7/8/62	2312 H	35 40 S	118 12 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
3017	12.2	14.4	26	4	16	8	8	7	26	2	22	4	1022.1	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	14.27	35.430	26.47	5.65	101			
1	25	14.23	35.390	26.45	5.70	101			
1	50	13.95	35.340	26.47	5.62	99			
1	75	13.94	35.350	26.48	5.66	100			
1	100	13.89	35.340	26.49	5.56	98			
1	150	13.24	35.260	26.56	5.60	97			
1	200	11.68	35.050	26.70	5.43	91			
1	300	10.14	34.810	26.79	5.59	91			
1	500	9.00	34.650	26.86	5.50	87			
1	700	8.03	34.560	26.94	5.23	80			
1	900	5.66	34.400	27.14	4.54	66			
1	1100	3.71	34.430	27.38	4.24	58			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/158/62	8/8/62	0122 H	35 20 S	118 19 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
130	13.3	15.0	26	3	16	6	7	7	26	2			1022.0	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.38	35.610	25.66	5.20	101			
1	10	18.36	35.640	25.68	5.16	100			
1	20	18.39			5.19				
1	30	18.39	35.630	25.67	5.19				
1	40	18.37	35.620	25.66	5.16	101			
1	75	18.32	35.620	25.68	5.17	100			
1	100	18.29	35.640	25.70	5.12	100			
						99			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/159/62	8/8/62	0228 H	35 12 S	118 19 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
77	13.3	14.4		1	16	6	4	7					1022.1	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.40	35.640	25.67	5.12	99			
1	10	18.40	35.620	25.66	5.16	100			
1	20	18.39	35.610	25.65	5.09	99			
1	30	18.41	35.610	25.65	5.15	100			
1	40	18.38	35.620	25.66	5.20	101			
1	50	18.37	35.610	25.66	5.20	101			
1	60	18.41	35.610	25.65	5.18	100			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/163/62	8/8/62	1847 H	35 12 S	117 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
79	13.9	15.6		1	16	6	2	8			21	1	1022.0	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.46	35.590	25.62	5.23	101			
1	10	18.40	35.610	25.65					
1	20	18.41	35.610	25.65	5.26	102			
1	30	18.40	35.590	25.63	5.26	102			
1	40	18.33	35.590	25.65	5.19	100			
1	50	18.32	35.590	25.66	5.18	101			
1	60	18.03	35.570	25.71	5.14	99			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/164/62	8/8/62	2007 H	35 25 S	117 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
91	13.9	15.0		1	16	0	3	7			21	1	1022.0	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.75	35.640	25.58	5.18	101			
1	10	18.74	35.620	25.57	5.18	101			
1	20	18.76	35.620	25.57	5.18	101			
1	30	18.75	35.640	25.58					
1	40	18.68	35.620	25.59	5.19	101			
1	50	18.63	35.610	25.59	5.15	100			
1	75	18.60			5.06				

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/165/62	8/8/62	2142 H	35 40 S	117 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
2377	13.3	14.4		1	16	0	4	7			21	1	1022.0	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	14.60	35.460	26.42	5.69	102			
1	25	14.40	35.440	26.45	5.57	99			
1	50	14.24	35.390	26.45	5.60	100			
1	75	14.10	35.340	26.44	5.69	101			
1	100	13.60	35.340	26.54	5.69	100			
1	150	12.64	35.140	26.59	5.49	94			
1	200	12.36	35.070	26.59	5.43	93			
1	300	10.85	34.900	26.74	5.60	92			
1	500	9.16	34.670	26.85	5.56	88			
1	700	8.22	34.540	26.90	5.28	82			
1	900	5.77	34.420	27.14	4.55	66			
1	1100	3.87	34.400	27.34	4.34	60			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/166/62	9/8/62	0003 H	36 00 S	117 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
4206	12.8	14.4		1	16	0	1	7			22	1	1022.0	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	15.86	35.570	26.23	5.53	102			
1	25	15.68	35.550	26.25	5.56	102			
1	50	15.46	35.500	26.27	5.57	102			
1	75	15.03	35.460	26.33	5.60	101			
1	100	14.90	35.460	26.36	5.54	100			
1	147	14.78	35.460	26.39	5.56	100			
1	194	14.38	35.460	26.47	5.50	98			
1	290	11.50	35.010	26.71	5.43	91			
1	490	9.15	34.700	26.88	5.60	89			
1	690	8.35	34.560	26.89	5.40	84			
1	890	7.22	34.450	26.97	4.70	71			
1	1090	4.26	34.360	27.27	4.43	62			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/167/62	9/8/62	0558 H	35 30 S	115 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
3017	12.2	13.3	04	1	16	8	5	7			22	1	1020.8	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	15.91	35.610	26.25					
1	25	15.89	35.610	26.25	5.52	102			
1	50	15.86	35.570	26.23	5.49	101			
1	75	14.87	35.570	26.45	5.48	99			
1	100	14.25	35.440	26.48	5.49	98			
1	150	13.22	35.260	26.56	5.49	96			
1	200	12.18	35.080	26.63	5.37	91			
1	300	10.72	34.900	26.76	5.49	90			
1	500	8.69	34.630	26.89	5.49	86			
1	700	6.50	34.450	27.07	4.64	69			
1	900	4.31	34.380	27.28	4.41	62			
1	1100	3.33	34.430	27.42	4.08	55			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/168/62	9/8/62	0800 H	35 15 S	115 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
503	12.8	13.9		1	16	6	6	7			24	1	1023.0	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.31	35.610	25.92	5.37	102			
1	25	17.26	35.640	25.96	5.36	102			
1	50	17.16	35.710	26.03	5.20	98			
1	75	16.68	35.680	26.12	5.33	100			
1	100	16.11	35.610	26.20	5.35	99			
1	150	15.34	35.520	26.31	5.43	99			
1	200	14.85	35.500	26.40	5.58	101			
1	300	12.66	35.160	26.60	5.44	93			
1	400	9.99	34.790	26.80	5.60	90			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/169/62	9/8/62	0939 H	35 00 S	116 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
68	14.4	17.2		1	16	0	4	7			24	1	1022.0	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	19.00	35.610	25.50	5.03	99			
1	10	18.98	35.610	25.50	5.03	99			
1	20	19.00	35.610	25.50	5.05	99			
1	30	19.01	35.640	25.52	5.05	99			
1	40	18.98	35.680	25.56	5.01	98			
1	50	17.82	35.530	25.73	5.11	98			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/170/62	9/8/62	1452 H	34 32 S	115 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
73	13.9	17.2		1	16	5	4	9			24	1	1017.8	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	19.30	35.590	25.41	5.16	102			
1	10	19.05	35.610	25.49	5.14	101			
1	20	18.98	35.610	25.50	5.06	99			
1	30	18.94	35.590	25.50	5.05	99			
1	40	18.90	35.570	25.49	5.03	98			
1	50	18.82	35.590	25.54	5.05	99			
1	60	18.80	35.590	25.53	5.01	98			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/171/62	9/8/62	1654 H	34 41 S	114 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
141	14.4	17.2	21	2	16	5	5	7	21	1	20	1	1016.9	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.91	35.730	25.61	5.20	102			
1	25	18.56	35.710	25.68	5.23	102			
1	50	18.30	35.790	25.81	5.20	101			
1	75	17.47	35.790	26.02	5.26	100			
1	100	16.98	35.840	26.17	5.33	101			
1	125	16.81	35.750	26.15	5.36	101			

STATION	DATE	TIME	LATITUDE	LONGITUDE
G3/173/62	9/8/62	2051 H	34 55 S	114 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
713	12.8	15.0		1	16	2	2	7			24	1	1018.0	0		

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	17.37	35.790	26.04	5.37	102			
1	25	16.98	35.810	26.15	5.37	101			
1	50	16.73	35.900+	26.28	5.40	101			
1	75	16.68	35.790	26.21	5.39	101			
1	100	16.52	35.750	26.21	5.42	101			
1	150	16.45	35.710	26.20	5.36	100			
1	200	15.35	35.550	26.34	5.34	98			
1	300	13.30	35.260	26.55	5.35	93			
1	500	8.54	34.600	26.89	5.43	85			
1	700	6.40	34.490	27.12	4.64	68			

+ PROPERTY DOUBTFUL

DATA

PART 3

ZOOPLANKTON

OBLIQUE TOWS : CLARKE–BUMPUS SAMPLER

STATION POSITION	DATE	TIME	DEPTH RANGE (m)	VOLUME FILTERED (m^3)	BIOMASS (mg/m^3)
G2/56/62 33°58'S. 151°29'E.	18/6/62	1427	0–148–0	18.4	123
G2/57/62 34°03'S. 157°37'E.	18/6/62	1750	0–250–0	47.7	60
G2/59/62 37°26'S. 150°15'E.	19/6/62	1403	153–0	11.3	121
G2/60/62 37°26'S. 150°17'E.	19/6/62	1610	268–0	21.0	35
G2/61/62 37°55'S. 149°00'E.	20/6/62	0825	76–0	6.3	111
G2/62/62 38°12'S. 149°05'E.	20/6/62	1454	144–0	7.6	32
G2/63/62 38°15'S. 149°12'E.	20/6/62	1725	290–0	16.5	109
G2/65/62 40°38'S. 148°43'E.	21/6/62	1110	200–0	18.2	23

OBLIQUE TOWS : CLARKE-BUMPUS SAMPLER

STATION POSITION	DATE	TIME	DEPTH RANGE (m)	VOLUME FILTERED (m^3)	BIOMASS (mg/m^3)
G2/67/62 39°18'S. 146°11'E.	22/6/62	1446	78–0	6.3	21
G2/69/62 40°29'S. 144°11'E.	23/6/62	1347	63–0	5.3	104
G2/70/62 40°35'S. 143°28'E.	23/6/62	1812	110–0	11.4	28
G2/71/62 38°42'S. 142°28'E.	24/6/62	0958	73–0	3.3	85
G2/72/62 38°56'S. 142°20'E.	24/6/62	1326	136–0	11.5	17
G2/73/62 39°00'S. 142°19'E.	24/6/62	1329	200–0	18.2	18
G2/74/62 37°53'S. 140°08'E.	25/6/62	0952	83–0	12.1	47
G2/75/62 37°58'S. 140°04'E.	25/6/62	1227	120–0	15.3	18

OBLIQUE TOWS : CLARKE-BUMPUS SAMPLER

STATION POSITION	DATE	TIME	DEPTH RANGE (m)	VOLUME FILTERED (m^3)	BIOMASS (mg/m^3)
G2/76/62 37°00'S. 138°33'E.	26/6/62	0841	74-0	8.2	34
G2/77/62 37°09'S. 138°30'E.	26/6/62	1112	160-0	10.2	51
G2/78/62 37°12'S. 138°30'E.	26/6/62	1248	200-0	12.0	34
G2/88/62 33°39'S. 131°52'E.	4/7/62	0710	200-0	17.4	89
G2/89/62 33°35'S. 131°48'E.	4/7/62	1010	135-0	11.0	30
G2/90/62 32°42'S. 131°27'E.	4/7/62	1705	75-0	9.0	40
G2/95/62 33°24'S. 128°46'E.	5/7/62	0715	250-0	18.1	38
G2/96/62 33°20'S. 128°45'E.	5/7/62	0947	150-0	17.6	57

OBLIQUE TOWS : CLARKE-BUMPUS SAMPLER

STATION POSITION	DATE	TIME	DEPTH RANGE (m)	VOLUME FILTERED (m^3)	BIOMASS (mg/m^3)
G2/97/62 33°05'S. 128°40'E.	5/7/62	1254	128–0	5.7	96
G2/104/62 33°43'S. 125°04'E.	7/7/62	1446	69–0	7.1	80
G2/105/62 34°13'S. 125°04'E.	8/7/62	0825	160–0	15.7	29
G2/107/62 34°33'S. 121°32'E.	9/7/62	0929	250–0	16.3	25
G2/108/62 34°32'S. 121°31'E.	9/7/62	1406	140–0	9.7	31
G2/109/62 34°21'S. 121°16'E.	9/7/62	1647	75–0	7.2	39
G2/110/62 34°15'S. 128°48'E.	12/7/62	1147	185–0	14.0	36

OBLIQUE TOWS : CLARKE-BUMPUS SAMPLER

STATION POSITION	DATE	TIME	DEPTH RANGE (m)	VOLUME FILTERED (m^3)	BIOMASS (mg/m^3)
G3/150/62 34°55'S. 119°00'E	7/8/62	0832	0–75–0	8.5	66
G3/151/62 34°58'S. 119°01'E.	7/8/62	1002	0–110–0	10.1	37
G3/152/62 34°58'S. 119°03'E.	7/8/62	1132	0–200–0	14.1	44
G3/160/62 35°12'S. 117°00'E.	8/8/62	0938	0–75–0	6.1	265
G3/161/62 35°25'S. 117°00'E.	8/8/62	1730	0–75–0	7.9	44
G3/162/62 35°25'S. 117°01'E.	8/8/62	1601	0–200–0	4.5	89
G3/170/62 34°32'S. 115°02'E.	9/8/62	1507	0–66–0	7.7	110
G3/171/62 34°40'S. 114°56'E.	9/8/62	1716	0–130–0	17.1	88

OBLIQUE TOWS : CLARKE-BUMPUS SAMPLER

STATION POSITION	DATE	TIME	DEPTH RANGE (m)	VOLUME FILTERED (m^3)	BIOMASS (mg/m^3)
G3/172/62 34°48'S. 114°50'E.	9/8/62	1956	0-200-0	12.3	37
G3/174/62 32°50'S. 114°38'E.	10/8/62	1004	0-200-0	20.7	31
G3/175/62 33°03'S. 114°44'E.	10/8/62	1158	0-144-0	15.6	51
G3/176/62 33°09'S. 114°49'E.	10/8/62	1338	0-50-0	9.6	73
G3/177/62 31°33'S. 115°12'E.	11/8/62	0745	0-50-0	6.1	85
G3/178/62 31°33'S. 115°07'E.	11/8/62	0942	0-150-0	14.3	100
G3/179/62 30°45'S. 114°52'E.	11/8/62	1519	0-50-0	4.5	567
G3/180/62 30°45'S. 114°51'E.	11/8/62	1704	0-130-0	7.6	66

DATA

PART 4

BENTHOS

BENTHIC BIOMASS

Values are given in g/grab
Table 3 gives station means
A blank signifies a zero return
△ Dredge hauls

STATION NUMBER	SAMPLE NUMBER	DEPTH (m)	SEDIMENT VOLUME (l)	ALGAE	CALCAREOUS ALGAE	ACTINOZOA	BRYOZOA	SPONGES	OTHER CORAL	WORMS	MOLLUSCS	CRUSTACEA	ECHINODERMS	ASCIDIANS	FORAMINIFERA	OTHER NONCORAL	ORGANIC DEBRIS
55	1	75	24.40	3.05	0.15		0.29			0.87	5.13	2.05	0.05	1.84	0.05		0.58
	2	75	9.80	0.09			0.06			0.06	0.18	0.22	0.05		0.01		0.35
	3	79	13.00	0.10			0.05			0.25	0.12	0.32	0.10		0.05		1.43
	4	79	22.80				0.10			1.01	0.72	2.55	7.46		0.08	0.08	
	5	79	22.80				0.15			0.24	0.05	0.07	0.03				
56	1	150	13.00	0.29			0.12			9.19	0.31	0.51	0.01		0.05		1.81
	2	150	8.10				0.34	0.01		1.60	0.58	0.47	0.08		0.17		0.55
	3	150	11.40					2.76		1.45		0.45	0.49		0.06		2.61
	4	150	13.00				0.04			27.77		0.63	0.01		0.25	0.04	1.96
	5	150	13.00				0.12			1.79	0.26	1.42	0.22	1.55	0.15		3.61
57	1	294	6.50							0.13		0.01			0.07		0.43
	2	300	3.30							0.15		0.05			0.06		0.15
	3	291	9.80							0.52		0.07			0.08		4.62
	4	295	4.90							0.10							3.54
	5	295	4.90						0.04	0.24		0.08			0.05		4.00
58	1	75	52.00				0.87	3.16		12.65	1.83	0.66	0.08	0.12	0.02	0.32	267.29
	2	75	48.80			0.38	0.13	70.00		9.82	0.60	0.38		0.06	0.03		354.76
	3	75	56.90				0.03			2.72		0.19	0.03		0.02		7.38
	4	75	52.00				0.02			2.36	0.12	0.28	0.65		0.04		2.69
	5	75	45.50				0.04			3.36	0.03	0.36	0.19	0.15	0.09	0.01	5.43
59	1	149	16.30				0.29			1.43	1.69	0.34	0.05		1.69	0.01	4.00
	2	149	16.30				0.04	0.04		1.90	0.08	0.02		9.47	0.03		12.92
	3	149	16.30			0.32	0.17			1.95	0.09	0.27		20.80	0.15		2.42
	4	149	13.00			0.18	0.26	13.18		0.97	0.06	0.40		1.10	0.54	0.01	3.49
	5	149	11.40				0.02	0.73		0.38	0.04	0.12	0.05	0.15	0.30		8.26
60	1	302	11.40			3.11	0.03	0.94		0.65	0.17	0.03	0.03	3.16	0.11		
	2	302	13.00			0.23		4.11		1.90	0.16	0.04	0.04	12.26	0.12	0.01	
	3	294	11.40			0.86	0.07	1.97		0.53	0.07	0.03	0.02	10.14	0.19	0.10	5.04
	4	304	9.80			4.15	0.87	0.06		1.90	0.08	0.18	0.48	6.32	0.17	1.93	
	5	300	6.50			0.08				2.33		0.47	0.31	0.39	0.03		7.08
61	1	75	13.00			0.06	2.92			1.97	21.78	1.06	0.49		0.03	0.02	5.29
	2	78	13.00			1.98	3.28	0.07		2.24	0.49	1.19	7.08	1.05	0.05	1.97	9.35
	3	77	13.00				1.53	0.02	6.76	2.41	8.70	1.00	0.13	15.67	0.11	2.81	1.33
	4	76	11.40			6.47	6.15	0.02	22.08	7.17	1.48	1.89	8.13	17.92	0.08	0.02	16.60
	5	77	19.50				0.32		11.50	0.86	39.57	0.61	0.90		0.03	0.20	0.05

STATION NUMBER	SAMPLE NUMBER	DEPTH (m)	SEDIMENT VOLUME (l)	ALGAE	CALCAREOUS ALGAE	ACTINOZOA	BRYOZOA	SPONGES	OTHER CORAL	WORMS	MOLLUSCS	CRUSTACEA	ECHINODERMS	ASCIDIANS	FORAMINIFERA	OTHER NONCORAL	ORGANIC DEBRIS
62	1	152	13.00				0.02			0.09		0.18	0.09	6.90	0.09		
	2	158	6.50							0.22		0.12	0.12		0.10		3.68
	3	149	16.30					0.02		2.49	0.05	0.59	0.68	0.73	0.05		3.47
	4	146	19.50					5.47		2.66	0.04	0.07	1.69	2.76	0.09		9.03
	5	154	22.80							2.77	0.09	0.72	0.47		0.05		4.66
63	1	315	4.90														3.72
	2	315	19.50					0.01		1.24		0.10	0.04	0.04	0.06		
68	1	58								0.85		0.83	1.34	0.05	0.19		1.25
	2	58				10.10	369.00	119.70	293.00	0.01	0.02	0.01	0.02	0.14			1.13
	3	58					0.04	0.37									
	4	58				0.06	0.02	0.42	9.34		0.01						
	5	58					0.06	0.04	4.26		0.03						
				0.64		1.00	0.24	0.18		0.02	0.02						
69	1	77	4.90					0.23	1.62	0.02							
	2	77															
	3	77								0.02							
	4	77					9.08	0.59		3.59		0.01	0.01	5.80		0.03	
	5	77					0.02			0.17					0.02	0.05	
71	1	75					0.03			0.01							
	2	75					5.16	12.53	1.87	0.01	0.07	0.01	0.29	3.25	0.01		
	3	75		0.72			0.01										
	4	75		25.20			0.02	23.50		0.01			0.03				
74	1	76		1.08		5.61	40.40	436.20		3.21	4.74	0.55	0.68	8.03	0.05	1.81	4.45
76	1	77	16.30					1.20		1.43							
	2	77	24.40				0.91	0.10		2.70		0.04	0.03				
	3	77	22.80				0.27	0.90		1.22		0.03	0.13			1.23	
	4	77	26.00					0.09		0.46		0.70					
	5	77	29.30				0.54			1.37			0.27			0.10	
77	1	155	1.60									0.15				0.03	
	2	155	3.30													0.03	
	3	144	6.50				0.28			0.07							
								0.25		0.09	2.45	0.05			0.03		
										0.28		0.02			0.04		
												0.06			0.02		

STATION NUMBER	SAMPLE NUMBER	DEPTH (m)	SEDIMENT VOLUME (l)	ALGAE	CALCAREOUS ALGAE	ACTINOZOA	BRYOZOA	SPONGES	OTHER CORAL	WORMS	MOLLUSCS	CRUSTACEA	ECHINODERMS	ASCIDIANS	FORAMINIFERA	OTHER NONCORAL	ORGANIC DEBRIS
89	1	148	9.80				0.96			0.23					0.01		
	2	148	9.80							0.75		0.05			0.03	0.05	
	3	148	9.80							0.05		0.05	0.07	0.49			
	4	148	16.30							0.01		0.01	0.03				0.61
	5	148	13.00							0.28		0.01	0.18				
90	1	78	22.80				5.98	0.16		0.27	4.67	0.02			1.79	0.06	2.37
	2	78	26.00				1.85	1.72		0.25		8.96		1.30			19.99
	3	78	22.80				1.77	0.06		1.11		0.57	0.04	0.09		0.06	7.78
	4	77	26.00	0.93		0.03	1.67	0.11		0.31		0.19		4.25		0.26	
	5	79	24.40					0.01		0.18		0.37	0.02				
96	1	147	3.30			0.03	0.01			0.27	0.14	0.03		0.13	0.01		0.94
	2	141	6.50				0.05			0.10	1.21	0.17		0.45	0.01	0.02	0.77
	3	141	9.80			0.01	0.06			0.37	1.49	0.19		0.01	0.25		1.23
	4	140	9.80							1.32	9.52	0.04	1.27		0.01		
	5	140	8.10			0.09	0.16			0.21	2.36	0.07		0.64			
97	1	79	8.10			0.03	4.50	424.20		0.12	0.44	0.01	0.01	0.20			
	2	79	6.50	2.55			6.05	0.59		0.10		0.10		50.90			
	3	79	9.80					226.20		3.62		0.30					
	4	79	9.80	2.18			1.13	8.01		0.01	0.04						
	5	79	8.10	6.48						0.13	0.02	0.01	0.01				
	6	79		24.96			55.00	143.00		8.75	1.46	0.39	1.07		0.03	0.07	4.09
	Δ	78	110.50	1.23	1.12												
104	1	77				0.02	1.35	2.84		0.66				0.04			
	2	77					0.59			0.02	0.14						
	3	77						0.78		0.01	0.09	0.01		0.01	0.06	7.33	0.14
	4	77	22.80				0.01			0.02		0.08			0.05		
	5	77	22.80				0.06			0.07	0.11	0.18	2.96	0.35		0.19	
	Δ	80	143.00	28.00	0.02		155.00	3.52		8.74	1.05	1.47	2.12				
105	1	125	1.60			0.12	0.24	56.00		0.72		0.03	0.03	34.00		0.01	
	2	123	14.60			0.01	0.02	0.01		0.03			0.03				
	3																
	4						0.20	0.98		0.42	0.02	0.07		3.57	0.02		
	5	125	9.80														

STATION NUMBER	SAMPLE NUMBER	DEPTH (m)	SEDIMENT VOLUME (l)	ALGAE	CALCAREOUS ALGAE	ACTINOZOA	BRYOZOA	SPONGES	OTHER CORAL	WORMS	MOLLUSCS	CRUSTACEA	ECHINODERMS	ASCIDIANS	FORAMINIFERA	OTHER NONCORAL	ORGANIC DEBRIS
108	1	145	16.30			2.36	4.51	104.00		0.06		0.04	0.01	3.55	0.02	1.23	
	2	144	1.60				0.33	0.41		0.08	0.06	0.01			0.03	0.01	
	3	153	9.80		0.18	5.88	0.34	0.10		0.15	0.08	0.01	0.01	1.40			
	4	154	1.60				0.03			0.03		0.02			0.01		
	5	158	9.80		0.19		6.55	0.15		0.03	0.01	0.01		0.02			
109	1	82	22.80				0.86	140.00		0.25		0.07				1.92	
	2	82	26.00				1.07			0.05		0.02				0.20	
	3	82	26.00							0.94		0.06				1.91	
	4	82	29.30				0.04			0.08		0.12		1.31		1.09	
	5	82	26.00				0.09	0.04		0.33	0.03	0.11		2.76			
128	1	150	6.50				0.26	0.38		0.06	0.05	0.15		3.67	0.05		0.22
	2	152	6.50				0.06			0.05	0.03	0.19	0.15	0.05	0.03		
	3	152				0.98	0.40	695.00		0.19				0.53			
	4	174	9.80			1.32	1.33	0.14		0.23		0.08		0.48	0.31	0.03	
	5	178	3.30				0.44	0.01		0.03		0.13	0.33	1.31			
150	1	73	9.80			0.17	2.39	0.02		0.55	0.15	0.64		4.00		0.03	
	2	76	13.00	0.19		0.11	2.19			1.62		0.10	0.01	0.03			
	3	71	24.40			0.04	8.46	1.65		0.76		0.47	1.02	39.50		0.06	0.67
	4	71	26.00				3.48	1.05		1.30	5.07	0.03		3.15		1.33	1.65
	5	71	29.30	0.01		1.17	10.08	0.03		0.60	0.32	0.05	1.40	0.18			0.65
152	1	320	3.30				0.03			0.06				0.12			
160	1	73	4.90		17.53	25.22	47.00	462.00		1.29	0.20	2.70	2.05	20.35	0.30		9.05
	2	73	13.00		5.44		0.49	0.01		0.09		0.05					
	3	77				0.57	2.77	1.87		0.69		0.01					0.36
	4	77	13.00		12.53	0.55	2.28	3.86		0.05		0.01	0.22		0.02		1.83
	5	77			1.55	1.17	82.50	799.00		0.44	1.60	0.44	0.04	93.00	0.43	0.45	9.29
161	1	168					5.55	15.00						0.71			0.46
170	1	73		0.55	27.61	0.46	213.50	338.00		0.18	0.60	0.87	0.16	7.61	0.93	0.05	1.68
	2	73		5.43		0.35	0.95	1.85		0.69		0.02			0.04		
	3	73	32.50		343.00		0.02			0.01		0.01	0.01	4.23	0.04	0.03	
	4	73	3.30	0.15	17.45	57.00	27.00	40.00		1.51	0.11	0.25	0.18	8.45	0.20	0.01	
	5	73	32.50		0.43	0.04	0.05	1.04		0.03		0.01		0.97	0.78	0.12	

STATION NUMBER	SAMPLE NUMBER	DEPTH (m)	SEDIMENT VOLUME (l)	ALGAE	CALCAREOUS ALGAE	ACTINOZOA	BRYOZOA	SPONGES	OTHER CORAL	WORMS	MOLLUSCS	CRUSTACEA	ECHINODERMS	ASCIDIANS	FORAMINIFERA	OTHER NONCORAL	ORGANIC DEBRIS
171	1	144	6.50			4.31	0.96	11.60		0.12		0.14	0.03	3.01			0.03
	2	144	9.80				0.25	146.00		0.03		0.02			0.04		1.60
	3	144	3.30				0.12	7.57		0.03		0.05		48.00			0.81
	4	144	3.30			0.01	0.13	45.50		0.04		0.04	0.09	0.68	0.02		
	5	144	3.30				0.12	50.50		0.08							
175	1	156	6.50				0.17	6.12		0.05		0.05	0.06	18.50	0.04		
	2	156	6.50				0.07	30.00		0.06		0.04	0.02	0.72			
	3	156	6.50				0.08			0.03			0.01				0.38
	4	156	3.30				0.01			0.07		0.01	0.02				0.10
	5	156	6.50				1.19	0.78		0.06		0.05					
176	1	73			63.00	8.92	39.00	870.00		2.07	0.10	0.43	0.08	12.61	0.18		2.34
	2	70			134.50	6.03	27.70	156.80		0.06		0.05	0.01	16.50	0.67	0.01	
	3	70		1.45	27.71	4.31	30.50	2255.16		1.48	0.03	1.89	0.61	49.75	2.20	1.17	
	4	78			69.32	0.02	15.70	302.00		0.02		0.07			2.21		
	5	65	19.50		357.45	0.05		11.99		1.32		0.01	0.01		1.19	0.07	
177	1	75			13.10	4.80	11.95	1319.80				0.08	0.05	11.50	1.06		
	2	75			37.30	0.09	1.64	3.14		0.55				0.03			
	3	75			34.44	15.21	9.91	82.90		0.08		0.03		3.55	0.66		
	4	75		0.63			1.86	1606.50		0.10		0.07	0.01	10.00			
	5	75		0.77	12.87	9.12	36.11	2087.90		0.05	0.16	0.25	0.02	44.50	6.20		
179	1	75				0.96	2.20	30.10		0.05	0.03		0.01	2.39	1.05		
	2																
	3	63				0.02	2.53	14.88		0.13	0.04	0.20	0.02	1.11	0.67		
	4	60		0.27		5.04	84.85	9904.55		3.66	18.80	0.41	1.31	56.24	2.86	0.01	
	5	60	13.00	13.51		0.05	26.10	345.70	1280.70	1.56	0.81	0.30	5.84	8.73	1.85	0.02	
				3.03													
180	1																
	2																
	3	143				0.17	10.17	292.00		0.58		0.30	0.04		0.04		

TABLE 3

BENTHIC BIOMASS – STATION MEANS

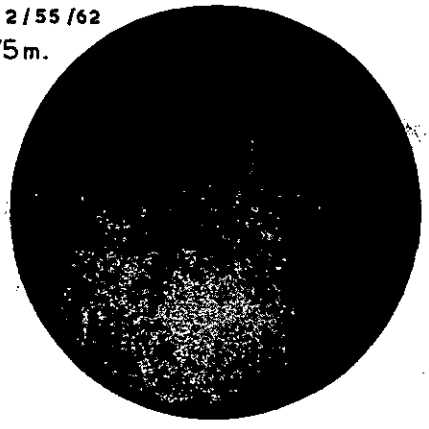
STATION NUMBER	DEPTH (m)	SEDIMENT VOLUME (l)	"CORAL"						"NONCORAL"							ORGANIC DEBRIS	TOTAL CORAL	TOTAL NONCORAL	TOTAL
			ALGAE	CALCAREOUS ALGAE	ACTINOZOA	BRYOZOA	SPONGES	OTHER CORAL	WORMS	MOLLUSCS	CRUSTACEA	ECHINODERMS	ASCIDIANS	FORAMINIFERA	OTHER NONCORAL				
55	79	18.56	0.65	0.03		0.13			0.49	1.24	1.04	1.54	0.37	0.04	0.02	0.47	0.81	4.73	5.54
56	150	11.70	0.06			0.12	0.55		8.36	0.23	0.70	0.16	0.31	0.14	0.01	2.11	0.74	9.90	10.64
57	295	5.88					0.01		0.23		0.04			0.05		2.55	0.01	0.32	0.33
58	75	51.04			0.08	0.22	14.63		6.18	0.52	0.37	0.19	0.07	0.04	0.07	127.51	14.93	7.43	22.36
59	149	14.66			0.10	0.16	2.79		1.33	0.39	0.23	0.02	6.30	0.54		6.22	3.05	8.82	11.86
60	300	10.42			1.69	0.19	1.42		1.46	0.10	0.15	0.18	6.45	0.12	0.41	2.42	3.30	8.87	12.17
61	77	13.98			1.70	2.84	0.02	8.07	2.93	14.40	1.15	3.35	6.93	0.06	1.00	6.52	12.63	29.82	42.45
62	154	15.62					1.10		1.65	0.04	0.34	0.61	2.08	0.08		4.91	1.10	4.78	5.88
63	315	12.20							1.04		0.46	0.69	0.04	0.13		1.19		2.37	2.38
68	58			0.13	2.23	73.87	24.14	61.32	0.01	0.02			0.03				161.69	0.06	161.75
69	77	0.98				1.82	0.16	0.39	0.76				1.16		0.02		2.31	1.94	4.25
71	75			6.48		1.30	9.01	0.47	0.01	0.02		0.08	0.81				17.26	0.92	18.18
74	76			1.08	5.61	46.40	436.20		3.21	4.74	0.55	0.68	8.03	0.05	1.81	4.45	489.29	19.07	508.36
76	77	23.76				0.34	0.46		1.44		0.18	0.09			0.28		0.80	1.90	2.79
77	144	3.80				0.09	0.08		0.15	0.82	0.04			0.03			0.18	1.04	1.21
89	148	11.74				0.19			0.26		0.02	0.06	0.10	0.01	0.01	0.12	0.19	0.46	0.65
90	79	24.40		0.19	0.01	2.25	0.41		0.42	0.93	2.02	0.01	1.13	0.36	0.08	6.03	2.86	4.95	7.81
96	140	7.50			0.03	0.06			0.45	2.94	0.10	0.25	0.25	0.06		0.59	0.08	4.06	4.14
97	78	21.83		5.34	0.16	9.53	114.57		1.82	0.28	0.12	0.16	7.30		0.01	0.58	129.60	9.68	139.29
104	80	31.43		4.67	0.01	26.17	1.19		1.59	0.23	0.29	0.85	0.07	0.02	1.25	0.02	32.03	4.29	36.32
105	125	5.20			0.03	0.09	11.40		0.23		0.02	0.01	7.51				11.52	7.79	19.31
108	158	7.82		0.07	1.65	2.35	20.93		0.07	0.03	0.02		0.99	0.01	0.25		25.01	1.38	26.38
109	82	26.02				0.41	28.01		0.33	0.01	0.08		0.81		1.02		28.42	2.25	30.67
128	178	5.22			0.46	0.50	139.11		0.11	0.02	0.11	0.10	1.21	0.08	0.01	0.04	140.06	1.63	141.69
150	71	20.50	0.04		0.30	5.32	0.55		0.97	1.11	0.26	0.49	9.37		0.28	0.59	6.21	12.47	18.68
152	320	3.30				0.03			0.06				0.12				0.03	0.18	0.21
160	77	6.18		7.41	5.50	27.01	253.35		0.51	0.36	0.64	0.46	22.67	0.15	0.09	4.11	293.27	24.89	318.15
161	168					5.55	15.00						0.71			0.46	20.55	0.71	21.26
170	73	13.66	1.23	70.70	11.57	48.30	76.18		0.48	0.14	0.23	0.07	4.25	0.40	0.04	0.34	214.98	5.62	220.60
171	144	5.24			0.86	0.32	52.23		0.06		0.05	0.02	10.34	0.01		0.49	53.41	10.48	63.90
175	156	5.86				0.30	7.36		0.05		0.03	0.02	3.84	0.01		0.10	7.68	3.96	11.64
176	65	3.90	0.29	130.40	3.87	22.58	719.19		0.99	0.03	0.49	0.14	15.77	1.29	0.25	0.47	876.32	18.96	895.28
177	75		0.28	19.54	5.84	12.29	1020.05		0.16	0.03	0.09	0.02	13.92	1.58			1058.01	15.79	1073.80
179	60	2.60	3.36		1.21	23.14	2059.05	256.14	1.08	3.94	0.18	1.44	13.69	1.29	0.01		2342.90	21.62	2364.52
180	143				0.06	3.39	97.33		0.19		0.10	0.01		0.01			100.78	0.32	101.10

DATA

PART 5

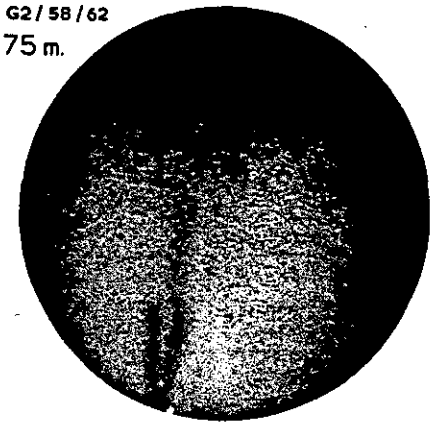
BOTTOM PHOTOGRAPHS

G2/55/62
75m.



G2/57/62
300m.

G2/58/62
75m.



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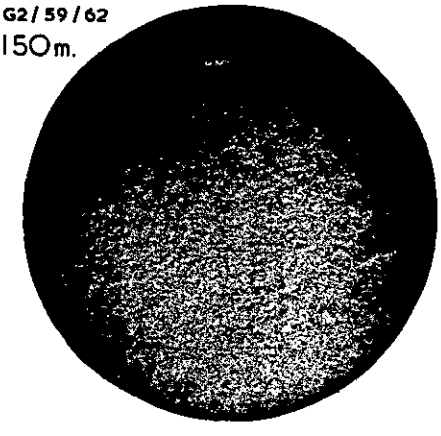

G2/62/62
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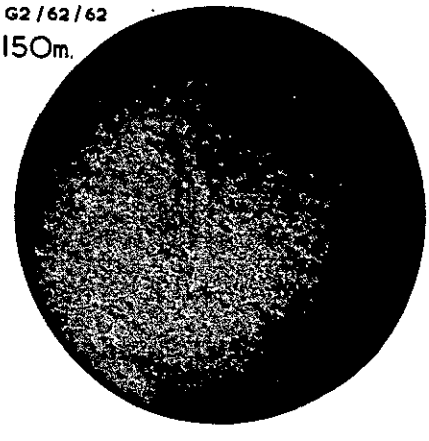

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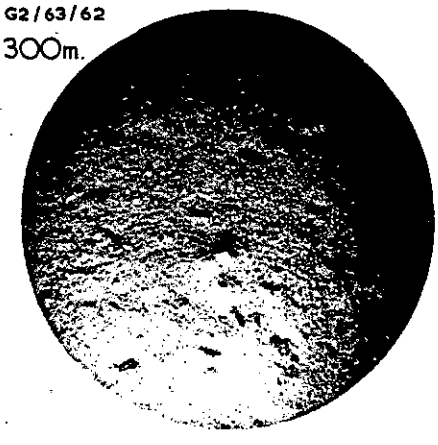
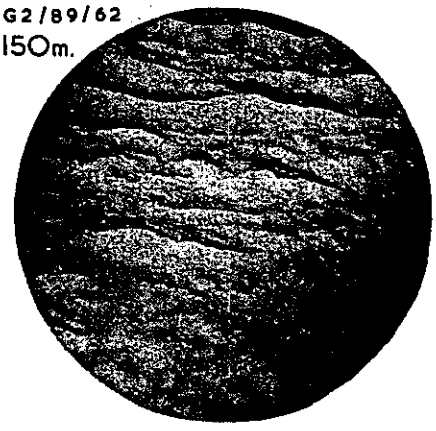


G2/90/62
75m.

G2/89/62
150m.



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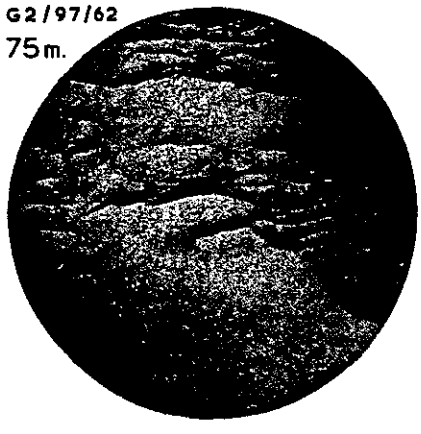

G2/96/62
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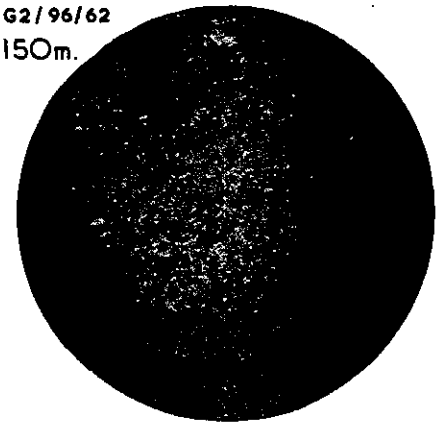

G2/104/62
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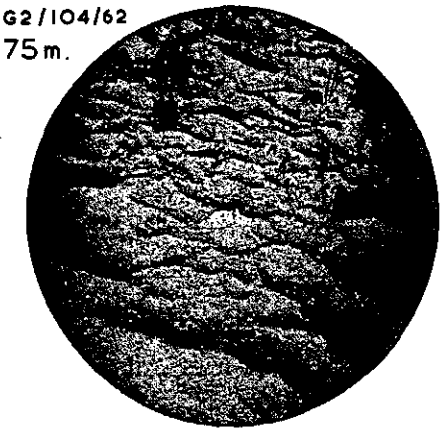

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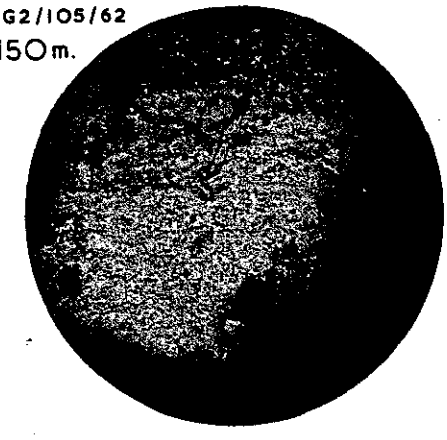
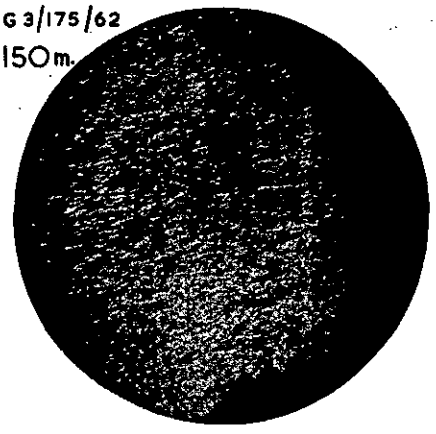


G 3/176/62
75 m.

G 3/175/62
150 m.



G 3/177/62
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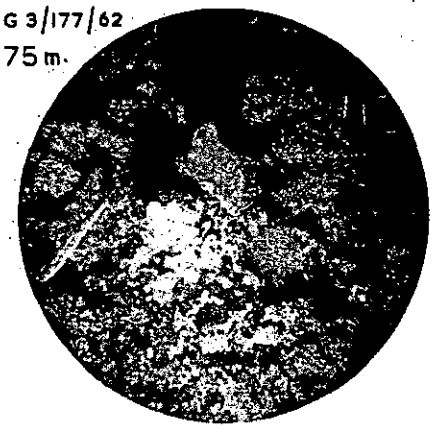

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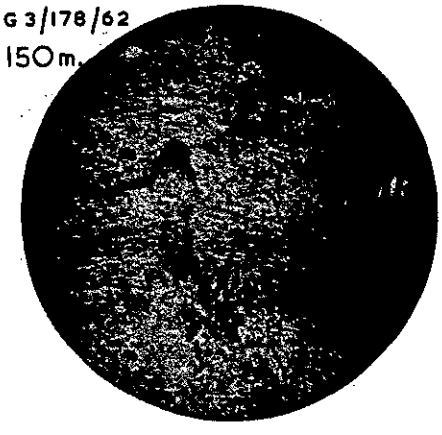

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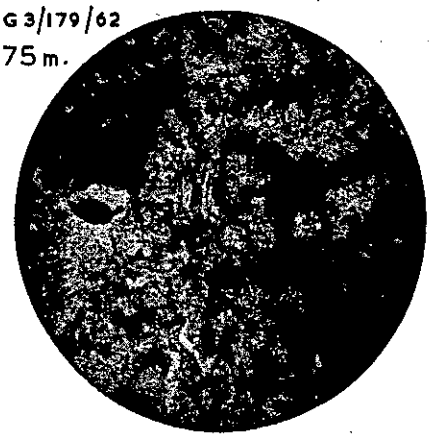

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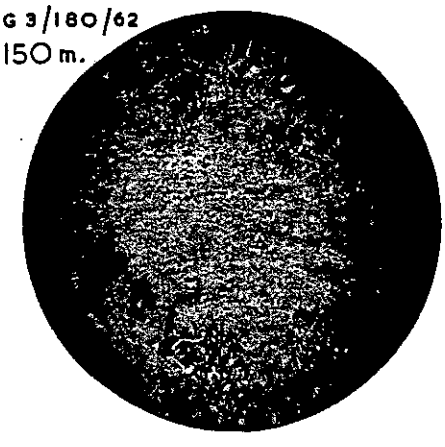
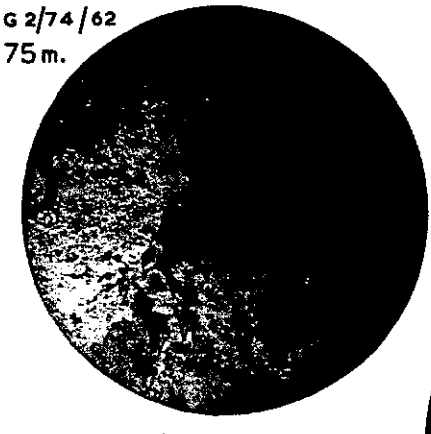
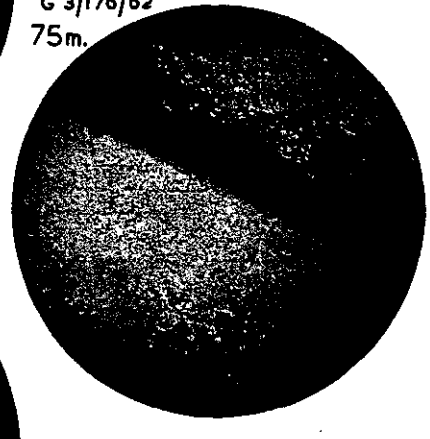


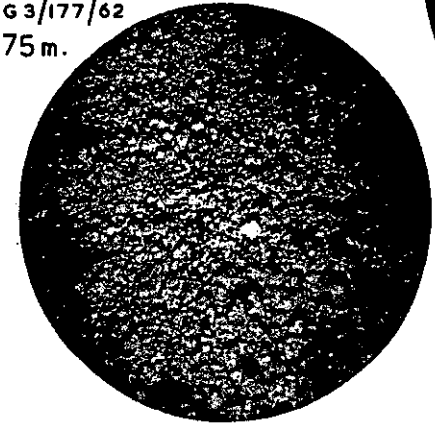
G 2/74/62
75 m.



G 3/176/62
75m.



G 3/177/62
75 m.



OCEANOGRAPHICAL CRUISE REPORTS

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