OCEANOGRAPHICAL OBSERVATIONS
IN THE INDIAN OCEAN IN 1962
H.M.A.S. *DIAMANTINA*
Cruise Dm 3/62

OCEANOGRAPHICAL CRUISE REPORT NO. 18

DIVISION OF FISHERIES AND OCEANOGRAPHY
COMMONWEALTH SCIENTIFIC AND INDUSTRIAL
RESEARCH ORGANIZATION, AUSTRALIA 1966

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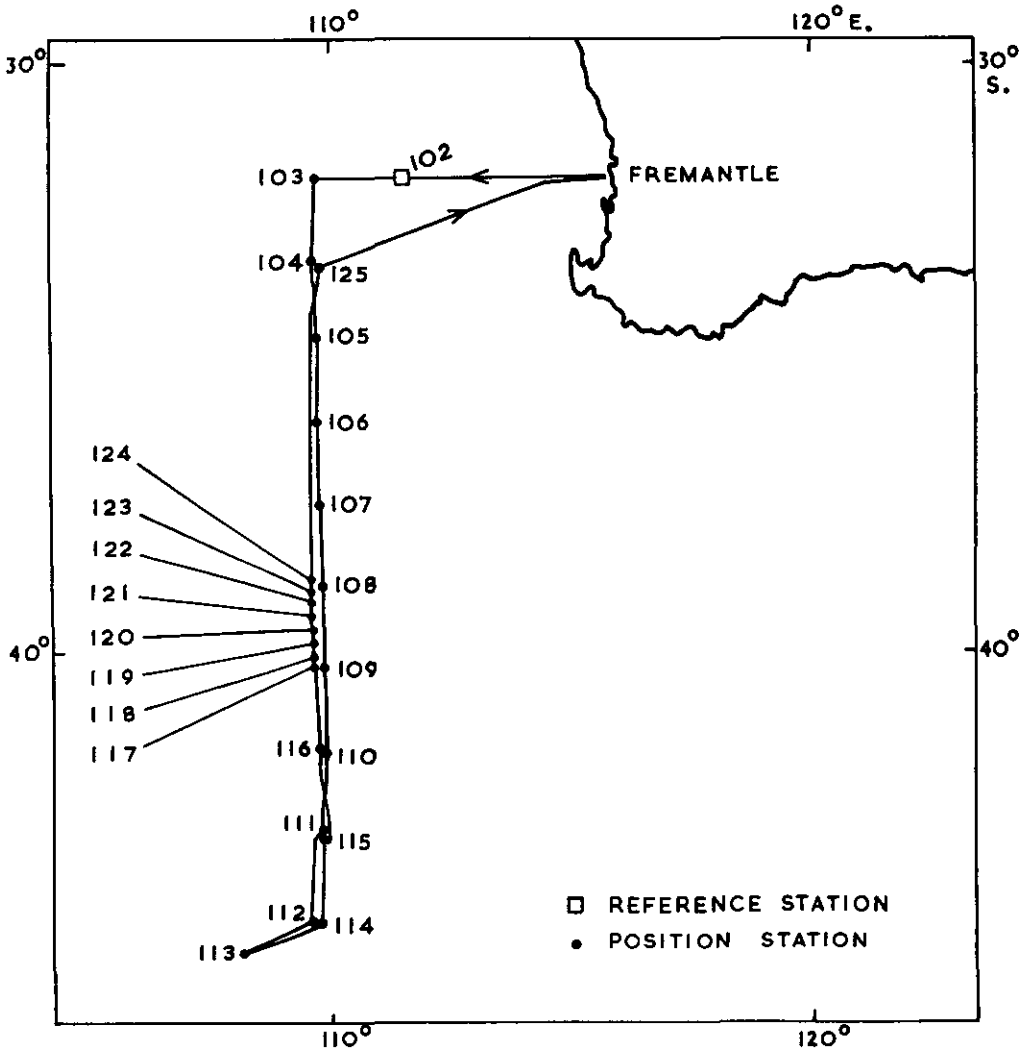
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OCEANOGRAPHICAL CRUISE REPORT

No. 18

Oceanographical Observations in the Indian Ocean in 1962

H.M.A.S. DIAMANTINA

Cruise Dm3/62

September 24 - October 6, 1962

I. INTRODUCTION

This report records the data for the third cruise in 1962 of H.M.A.S. Diamantina, Royal Australian Navy oceanographic frigate, in the Indian Ocean.

Objectives

To investigate the distribution of zooplankton species where gradients and boundaries between the subtropical and subantarctic faunas exist and to determine zooplankton biomass, primary production, pigments, and micronekton abundance along a southern extension of the 110°E. section worked during the Seasonal Biological Cruises.

To examine the environmental factors likely to influence the distribution of the biological properties, and the interrelations of these properties with particular reference to the dynamics of production.

Itinerary

The cruise commenced at Fremantle on September 24, occupied SCOR-UNESCO Reference Station 1, and then a series of stations south along the 110°E. meridian to 46°S., north along the 110°E. meridian to 33°30'S. and then returned to Fremantle (Fig. 1).

Scientific Personnel

D. Tranter (Cruise Leader)
N. Dyson
A. Heron
T. Khan (CSIR Pakistan)
J. Klye
Y. Magnier (Institut Francais d'Oceanie, New Caledonia)

Salinity, oxygen, inorganic phosphate, and total phosphorus determinations were done in the ship's laboratory by Mr Klye. Nitrate analyses were done at Cronulla by Messrs Klye and Walker. The primary production samples were taken and incubated aboard by Mr Dyson, and the counts were made at Cronulla by Mr Scott. The samples for pigment determination were taken aboard by Mr Dyson, and the analyses were done at Cronulla by Mr Wootton. The zooplankton samples were weighed at Cronulla by Mr Tranter. The micronekton samples were weighed at Noumea. The data were processed under the direction of Mr Hedge, by Mrs Bailey, Miss Hammond. Mrs Sander, and Miss Wanstall. The track chart was prepared by Mr Breach.

II. WORK ACCOMPLISHED

Twenty-four stations were worked (Dm3/102/62-Dm3/125/62). Bathythermograph casts were made at 24 stations. Surface hydrology samples were collected at 23 stations, subsurface hydrology samples at 17 stations, primary production at 18 stations, pigments at 18 stations, zooplankton at 17 stations and micronekton at 8 stations.

TABLE 1

WORK DONE AT EACH STATION

Stn No.	BT	Hydrology			Primary Production			Pig-ments	Zoo-plankton			Micro-nekton
		1	2	3	1	2	3		1	2	3	
102	+	+	+		+	+	+	+	+	+		+
103	+	+	+				+	+				
104	+	+		+			+	+	+	+		+
105	+	+	+				+	+	+	+		
106	+	+		+			+	+	+	+		+
107	+	+	+			+	+	+	+	+		
108	+	+		+			+	+	+	+		+
109	+	+	+				+	+	+	+		
110	+	+		+			+	+	+	+		+
111	+	+	+			+	+	+	+	+		
112	+	+		+			+	+		+		+
113	+	+	+				+	+		+		
114	+						+	+	+	+		+
115	+	+		+	+	+	+	+	+	+		+
116	+	+	+				+	+		+		
117	+	+		+			+	+		+		
118	+	+										
119	+	+										
120	+	+										
121	+	+										
122	+	+										
123	+	+										
124	+	+	+				+	+		+	+	
125	+	+	+				+	+	+	+	+	

BT — Bathythermograms

Hydrology
1 Surface samples
2 Subsurface samples
3 Sampling to 500 m only for temperature and salinity

Primary Production
1 In situ incubation
2 Simulated in situ incubation
3 Artificial light incubation

Zooplankton
1 Indian Ocean Standard Net
2 Clarke-Bumpus horizontal tows
3 Clarke-Bumpus oblique tows

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.

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

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

Sigma-t.- Sigma-t values were calculated by computer, using the Table of 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.- The standard Winkler method (Jacobsen, Robinson, and Thompson 1950) was used with potassium iodate as the iodometric standard. Samples were collected in 275-300 ml capacity bottles and 100 ml duplicate aliquots were titrated to a starch end point. Values are given as ml/l. Duplicate titrations agreed to better than 0.03 ml/l of oxygen.

Oxygen Saturation.- Oxygen percentage saturation values were calculated, by computer, using the equation of Richards and Corwin (1956).

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 minutes of adding reagents, and completed within 10 minutes. At air temperatures greater than 25°C batches of 6 were analysed; readings were begun within 5 minutes of adding reagents and completed within 7 minutes. Each batch was compared with a distilled water blank and a 0.65 µg-atom/l standard in 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. If it is wished 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 phenolphthalein were added. If alkaline, perchloric acid was added until a slight acidity persisted. The flasks were allowed to stand for about 24 hours 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. If it is wished to correct for salt effects, the results given should 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 adding 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 hours. 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. Primary Production

Water samples were aliquots of those taken in a twin 6 l. plastic sampler of the type described by Jitts (1964. The ^{14}C method described by Dyson et al. (1965) was used.

The samples were poured into 300 ml Pyrex bottles and incubated (a) in situ, (b) in a simulated in situ incubator, or (c) in artificial light constant at 1100 ft candles. Geiger counting was done on board with a windowless counter.

4. Pigments

Water samples were taken with a plastic sampler and filtered within one or two hours through HA Millipore filters. The filters were placed in envelopes and stored in a refrigerator in metal desiccators over silica gel. The analyses were carried out at Cronulla using the method given by Humphrey (1960), except that 4 cm cells were used in the Unicam SP 600 spectrophotometer and 9 ml 90% acetone were used for extraction.

5. Zooplankton

Sampling consisted of

(a) Vertical hauls through the upper 200-0 m with the Indian Ocean Standard Net (IOSN)

(b) Horizontal and oblique tows within the 200-0 m stratum with Clarke-Bumpus Samplers (CBS)

(a) Vertical Hauls 200-0 m: The IOSN was used in the standard manner (Currie 1963), except that a heavier (100 lb) weight was attached to keep the net under control; this was replaced with a 30 lb weight during washing operations. No flowmeter was used. Wire angle averaged 20° and never exceeded 40°. The length of wire paid out to place the net at 200 m varied from 200-260 m with a mean of 214 m.

Samples were removed from the net in the following manner:

The plankton bucket was detached, the contents were poured into a larger container and the bucket replaced. The net was lowered into the water up to the ring and raised again, and the washings collected as before; remnants still adhering to the codend were washed into the bucket by slopping water from the outside. Finally the net was lowered into the water and washed through without the bucket attached.

Sampling was in duplicate, the one haul immediately following the other. One sample is lodged with the Indian Ocean Biological Centre, Cochin, India; the other is at Cronulla.

(b) Horizontal and Oblique Tows: Four CBS were towed simultaneously at approximately 200, 100, 50 and 0 m. The duration of the tow was approximately 45 minutes. The wire angle was kept within the limits 45-60°, the ship's speed being 2-3 kt. Depth recorders (Hamon, Tranter, and Heron 1963) were attached. These record both the depth range and the modal depth. CBS were washed by hand in the ship's laboratory and the entire catch removed. At Stations 124 and 125 oblique tows (0-200-0 m) were made to sample the water column.

Storage of Samples

Samples were concentrated in the shipboard laboratory and stored in plastic bottles. Neutralized formalin was added to a final concentration of 10%.

Biomass Determination

Biomass was determined at Cronulla approximately one month after the end of the cruise. Each sample was strained off in a weighing dish and allowed to drain. Weighing dishes with a base of 7 cm^2 and 80 meshes per $inch^2$ gauze were used for CB samples, and ones with a base of 25 cm^2 and 60 meshes per inch gauze were used for IOSN samples. The drained sample was then washed several times in 50% alcohol to remove extraneous water and allowed to drain on an absorbent cloth which was repeatedly wrung dry. When the samples began to show signs of friability the weighing dish was

carefully dried and the sample weighed. The entire operation took 5-10 minutes, depending on the size of the sample. Samples containing large quantities of gelatinous material took longer. The routine procedure was to weigh the entire catch, and where exceptionally large organisms occurred (weighing more than half the rest of the catch), to make a second weighing without them.

Estimation of Volume Filtered

In estimating volume filtered by the IOSN it was assumed that 1 metre of wire out results in 1 m^3 of water filtered (the mouth area of the net being 1 m^2). Estimates of volume filtered by CBS are based on flowmeter readings referred to calibrations made before and after the cruise (Tranter 1962).

6. Micronketon

The micronekton programme, more correctly termed the midwater trawl programme, consisted of oblique tows through the upper 200 m layer with a 5 ft Isaacs-Kidd midwater trawl. The tows were made at every night station. The programme was conducted, in the field and in the laboratory, by the staff of the Laboratoire d'Oceanographie of the Institut Francais d'Oceanie, Noumea.

On the Ship

The gear consisted of a 5 ft Isaacs-Kidd midwater trawl scaled down from the 6 ft trawl (King and Iversen 1962; Aron 1960). No flow meter 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 per minute 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 minutes the wire was retrieved at a winch speed of 9 m/min. The average time at which the tows were made was 10 p.m. The paying-out period averaged 15 minutes and the retrieval period 80 minutes.

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. The samples were stored in neutralized 10% formalin, in plastic jars; larger organisms were stored separately.

In the Laboratory

Samples were sorted by taxa 1-2 months after collection. The wet volumes were measured by displacement and counts of subsamples were made. The taxa could be pooled into 4 main categories:

1. Gelatinous organisms (Medusae, Salps, Siphonophores) - no counts were made, the components very often being broken.

2. Planktonic organisms of relatively small size - no counts were made, the components being too numerous.

3. Macroplanktonic organisms - counts were made for each of the following components and in some cases for genus: Annelids, Pteropods, Heteropods, Chaetognaths, Amphipods, Stomatopods, Carids, Penaeids, Mysids, Euphausiids, Phyllosomas.

4. Micronektonic organisms - counts were made for each of the following components: Fishes, Fish larvae, Leptocephali, Cephalopods. Counts were made by species and by size for the fishes.

Categories 3 and 4 predominate in midwater trawl samples but are not clearly distinguished. Detailed results will be published separately; average conversion factors, determined for each taxa or category, were used to convert from wet volume to dry weight (the dry weight was obtained by keeping the sample at 60°, in an oven, until the weight remained constant - usually 24 hours). A table of conversion factors is given with the data.

Categories 1 and 2 are comparable to the organisms obtained by the usual conical plankton net. Results are expressed in dry weight per average tow (using the general average conditions for all stations - 15 minutes for paying out, 5 minutes for horizontal tow, 78 minutes for retrieval). Results are then directly comparable.

From the above data it is possible to obtain absolute values by a method already used by King and Iversen (1962) and Aron (1960). Assuming that (a) the speed of the trawl was known, (b) the trawl was working during paying out and retrieval in a manner proportional to the ship's speed, (c) all the water passing through a definite section of the net was filtered and (d) all the organisms passing through this section were caught, then the front end surface can be used to calculate the minimum value filtered. This gives the following results:

Assumed maximum volume of water filtered per average tow

$$= 1.929 \text{ m}^2 \times 10{,}000 \text{ m} = 19{,}290 \text{ m}^3$$

Assumed minimum volume of water filtered per average tow

$$= 0.197 \text{ m}^2 \times 10{,}000 \text{ m} = 1{,}970 \text{ m}^3$$

From these estimates of maximum and minimum volume filtered it is possible to convert the data (p. 87) to mg/m^3 (minimal and maximal estimates).

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IV. DATA SHEETS

The hydrology data were listed on a C.D.C. 3600 Computer, and primary production and pigment data on an I.B.M. 1401 Computer. An explanation of the headings for each set of data sheets is given at the beginning of the relevant part.

DATA

PART 1

HYDROLOGY

DEEP STATIONS

EXPLANATION OF HEADINGS

Parts 1 and 2	Hydrology
STATION	Gives the station identification. For example, Dm3/102/62 signifies the 102nd station worked by Diamantina in 1962, on her 3rd 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 used for the time zone (Table 2) follows the time

TABLE 2

CODE FOR TIME ZONES

Longitude Exceeding		Up to but not exceeding	Time Zone (hrs)	Code
07°30'E.	-	22°30'E.	-1	A
22°30'E.	-	37°30'E.	-2	B
37°30'E.	-	52°30'E.	-3	C
52°30'E.	-	67°30'E.	-4	D
67°30'E.	-	82°30'E.	-5	E
82°30'E.	-	97°30'E.	-6	F
97°30'E.	-	112°30'E.	-7	G
112°30'E.	-	127°30'E.	-8	H
127°30'E.	-	142°30'E.	-9	I
142°30'E.	-	157°30'E.	-10	K
157°30'E.	-	172°30'E.	-11	L
172°30'E.	-	180°	-12	M
180°	-	172°30'W.	+12	Y
172°30'W.	-	157°30'W.	+11	X
157°30'W.	-	142°30'W.	+10	W
142°30'W.	-	127°30'W.	+9	V
127°30'W.	-	112°30'W.	+8	U
112°30'W.	-	97°30'W.	+7	T
97°30'W.	-	82°30'W.	+6	S
82°30'W.	-	67°30'W.	+5	R
67°30'W.	-	52°30'W.	+4	Q
52°30'W.	-	37°30'W.	+3	P

Longitude Exceeding	Up to but not exceeding	Time Zone (hrs)	Code
37°30'W.	- 22°30'W.	+2	O
22°30'W.	- 07°30'W.	+1	N
07°30'W.	- 07°30'E.	0	Z

LATITUDE LONGITUDE	Given in degrees and minutes
SONIC DEPTH	Given in metres, measured at standard sound velocity of 800 fm (1463 m) per second
AIR TEMP. WET DRY	Air temperatures recorded from wet and dry bulb thermometers in °C
WIND DIR. SP.	Wind direction and speed are coded using Tables 8 and 9 in U.S. Hydrogr. Office (1955)
ANEM. HEIGHT	The average height of the anemometer above sea level, given in metres
CLOUD TYPE AMT.	Cloud type and amount are coded using Tables 2 and 3 in U.S. Hydrogr. Office (1955)
VIS.	Visibility is coded using Table 4 in U.S. Hydrogr. Office (1955)
SEA DIR. AMT.	Sea direction and amount are coded using Tables 5 and 8 in U.S. Hydrogr. Office (1955)
SWELL DIR. AMT.	Sea swell direction and amount are coded using Tables 6 and 8 in U.S. Hydrogr. Office (1955)
ATMOS. PRESSURE	Atmospheric pressure given in millibars
WIRE ANGLES CASTS 1, 2, and 3	Wire angles are measured at the surface and expressed in degrees for each cast. An asterisk indicates that the wire angle was not measured

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
***	Indicates no data available

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/102/62	25/9/62	0900 G	32 00 S	111 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
4855	13.3	15.0	22	4	16	0	8	7	23	1	24	1	1017.4	15	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	16.41	35.741	26.24	5.46	102	0.12	0.19	***
2	25	16.40	35.730	26.23	5.55	104	0.05	***	0.3
2	50	16.05	35.720	26.31	5.52	103	0.11	0.17	0.1
2	75	15.96	35.722	26.33	5.46	101	0.09	***	0.1
2	100	15.88	35.694	26.33	5.41	100	0.08	0.25	0.1
2	150	15.53	35.635	26.36	5.32	98	0.13	***	0.2
2	200	14.35	35.498	26.51	5.40	97	0.25	0.34	1.9
2	300	12.14	35.148	26.70	5.36	92	0.43	0.53	1.9
2	500	9.78	34.794	26.85	5.45	88	0.73	0.88	8.1
2	700	8.56	34.622	26.91	5.45	85	0.96	1.03	10.0
2	900	6.08	34.428	27.11	4.58	67	1.43	1.48	24.6
1	991	4.94	34.387	27.22	4.41	63	1.61	1.84	25.8
1	1155	3.97	34.462	27.38	3.71	52	1.86	1.89	31.1
1	1320	3.38	34.515	27.48	3.59	49	1.92	1.93	32.3
1	1730	2.65	34.646	27.66	3.58	48	1.84	1.83	30.0
1	2140	2.25	34.715	27.74	3.75	50	1.84	***	26.7
1	2552	2.00	34.724	27.77	3.82	51	1.74	1.89	30.0
1	2964	1.73	34.727	27.80	4.05	53	1.71	1.80	29.6
1	3375	1.42	34.721	27.81	4.27	56	1.74	1.79	30.0
1	3790	1.29	34.719	27.82	4.23	55	1.67	1.76	32.1

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/103/62	26/9/62	0830 G	32 00 S	110 02 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
4845	11.7	15.0	18	6	16	6	5	8	18	4	17	4	1020.7	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	19.39	35.596	25.40	5.14	102	0.13	0.25	0.2
2	25	19.36	35.594	25.40	5.14	102	0.11	***	0.1
2	49	19.38	35.561	25.37	5.20	103	0.13	0.25	0.1
2	74	18.96	35.754	25.63	4.97	97	0.14	***	0.2
2	123	18.29	35.829	25.85	4.99	96	0.13	0.25	0.2
2	172	16.99	35.830	26.17	5.16	97	0.15	***	0.2
2	270	13.78	35.409	26.57	5.22	92	0.40	0.46	1.8
2	368	11.29	34.999	26.74	5.48	90	0.61	0.67	6.8
2	466	9.75	34.769	26.83	5.58	89	0.80	0.97	10.8
2	663	8.55	34.610	26.90	5.37	84	1.04	***	16.4
2	859	5.60	34.413	27.16	4.47	64	1.57	1.67	27.6
1	1087	3.99	34.477	27.39	3.82	53	1.86	1.97	32.4
1	1285	3.44	34.519	27.48	3.53	48	1.95	2.02	35.1
1	1481	3.18	34.591	27.56	3.35	46	1.97	2.14	35.6
1	1976	2.45	34.693	27.71	3.64	49	1.86	1.97	34.1
1	2470	2.04	34.718	27.76	3.70	49	1.88	1.97	35.3
1	2964	1.72	34.721	27.79	4.04	53	1.80	1.88	27.3
1	3458	1.46	34.714	27.80	4.16	54	1.81	1.86	31.7
1	3952	1.25	34.713	27.82	4.32	56	1.81	1.86	33.5
1	4446	1.15	34.710	27.82	4.39	56	1.79	1.83	33.5

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/104/62	26/9/62	2015 G	33 24 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
2412	9.4	13.3	22	4	16	6	*	7	22	3	20	1	1022.0	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	15.97	35.707	26.32	***	***	***	***	***
1	24	15.96	35.710	26.32	***	***	***	***	***
1	49	15.96	35.712	26.32	***	***	***	***	***
1	72	15.93	35.707	26.32	***	***	***	***	***
1	97	15.87	35.700	26.33	***	***	***	***	***
1	146	14.91	35.542	26.43	***	***	***	***	***
1	195	13.04	35.234	26.58	***	***	***	***	***
1	292	10.48	34.878	26.79	***	***	***	***	***
1	487	7.57	34.524	26.98	***	***	***	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/105/62	27/9/62	0800 G	34 48 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
3292	9.4	12.2	20	1	16	6	5	8	20	1	22	1	1021.0	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	13.39	35.393	26.64	5.83	102	0.17	0.48	1.6
2	25	13.23	35.376	26.66	5.87	102	0.17	***	1.4
2	50	12.83	35.295	26.67	5.86	101	0.22	0.54	2.5
2	75	12.24	35.181	26.70	5.61	96	0.31	***	3.4
2	100	12.04	35.144	26.71	5.61	95	0.34	0.63	2.8
2	150	12.20	35.223	26.74	5.79	98	0.30	***	3.5
2	200	11.96	35.173	26.75	5.84	99	0.32	0.64	8.3
2	300	10.42	34.892	26.81	5.66	92	0.56	0.82	12.7
2	500	9.30	34.714	26.86	5.58	88	0.66	1.04	17.5
2	700	8.34	34.593	26.92	5.25	82	0.84	1.22	28.4
2	900	5.79	34.413	27.14	4.55	66	1.22	1.71	33.0
1	1081	3.92	34.402	27.34	4.19	58	1.44	1.93	32.4
1	1278	3.43	34.496	27.46	3.67	50	1.53	2.00	35.0
1	1474	3.05	34.568	27.56	3.55	48	1.56	2.09	27.9
1	1966	2.43	34.692	27.71	3.70	49	1.71	2.00	32.4
1	2457	1.96	34.730	27.78	3.84	50	1.67	2.13	31.5
1	2948	1.55	34.732	27.81	4.24	55	1.67	2.02	32.0

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/106/62	27/9/62	2000 G	36 12 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
4938	10.0	11.7	30	3	16	1	2	7	26	2	25	4	1017.0	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	13.03	35.327	26.66	***	***	***	***	***
1	23	13.01	35.328	26.66	***	***	***	***	***
1	46	13.02	35.339	26.67	***	***	***	***	***
1	69	12.96	35.333	26.68	***	***	***	***	***
1	92	12.63	35.262	26.69	***	***	***	***	***
1	137	11.82	35.129	26.74	***	***	***	***	***
1	183	11.79	35.135	26.75	***	***	***	***	***
1	274	10.58	34.910	26.80	***	***	***	***	***
1	457	9.58	34.749	26.85	***	***	***	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/107/62	28/9/62	0800 G	37 36 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
4030	9.4	11.7	30	3	16	1	6	8	32	2	31	1	1010.0	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	13.66	35.434	26.61	5.73	101	0.34	0.48	1.0
2	23	13.63	35.433	26.62	5.57	98	0.32	***	1.4
2	46	13.60	35.432	26.62	5.68	99	0.32	0.46	2.4
2	68	13.46	35.408	26.63	5.71	100	0.34	***	0.8
2	91	13.09	35.343	26.66	5.72	99	0.38	0.50	4.0
2	136	12.59	35.263	26.70	5.74	98	0.43	***	2.0
2	182	12.11	35.159	26.71	5.72	97	0.52	0.59	3.5
2	272	11.63	35.120	26.77	5.90	99	0.54	0.69	4.0
2	454	9.39	34.725	26.86	5.60	89	0.90	1.09	12.6
2	635	8.69	34.624	26.89	5.38	84	1.04	1.15	15.8
2	816	6.86	34.472	27.04	4.72	71	1.38	1.47	***
1	1026	4.33	34.372	27.27	4.47	62	1.75	1.93	35.3
1	1216	3.25	34.416	27.42	4.18	57	1.86	1.93	37.1
1	1407	2.97	34.512	27.52	3.81	51	1.89	1.99	37.7
1	1889	2.47	34.674	27.69	3.79	50	1.88	2.00	***
1	2375	2.06	34.736	27.78	4.26	56	1.71	1.83	35.6
1	2865	1.60	34.739	27.81	4.44	58	1.74	1.76	32.7
1	3356	1.18	34.715	27.83	4.61	60	1.77	1.80	32.7

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/108/62	28/9/62	2000 G	39 00 S	110 02 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
4389	11.1	13.3	28	4	16	6	5	7	28	3	32	1	1004.5	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	13.35	35.396	26.65	***	***	***	***	***
1	23	13.30	35.388	26.65	***	***	***	***	***
1	47	13.31	35.388	26.65	***	***	***	***	***
1	70	13.29	35.388	26.65	***	***	***	***	***
1	93	13.29	35.390	26.65	***	***	***	***	***
1	140	13.27	35.386	26.65	***	***	***	***	***
1	186	13.16	35.384	26.68	***	***	***	***	***
1	279	11.44	35.053	26.75	***	***	***	***	***
1	466	9.74	34.770	26.84	***	***	***	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/109/62	29/9/62	0800 G	40 24 S	110 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
4505	4.4	8.3	22	4	16	0	6	7	22	3	24	4	1008.0	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	10.44	34.887	26.81	6.12	100	0.61	0.61	6.9
2	24	10.44	34.892	26.81	6.12	100	0.60	***	6.6
2	48	10.46	34.891	26.81	6.17	101	0.60	0.59	6.3
2	71	10.41	34.886	26.81	6.13	100	0.63	***	5.5
2	95	10.41	34.882	26.81	6.13	100	0.63	0.61	7.3
2	142	10.38	34.882	26.81	6.14	100	0.66	***	6.9
2	190	10.35	34.877	26.82	6.07	99	0.65	0.65	8.2
2	284	10.05	34.827	26.83	6.01	97	0.69	0.79	12.0
2	473	9.35	34.703	26.85	5.70	90	0.88	0.88	15.8
2	662	8.51	34.598	26.90	5.47	86	1.05	1.02	11.3
1	1075	4.69	34.357	27.22	4.73	67	1.63	1.60	30.3
1	1271	3.57	34.382	27.36	4.33	59	1.76	1.81	34.5
1	1465	3.00	34.470	27.48	4.01	54	1.82	1.83	32.1
1	1956	2.53	34.651	27.67	3.83	51	1.89	1.84	28.8
1	2444	2.09	34.735	27.77	4.30	56	1.64	1.64	32.0
1	2932	1.71	34.740	27.81	4.47	58	1.64	1.63	30.3
1	3421	1.26	34.721	27.83	4.65	60	1.64	1.63	29.6
1	3910	0.92	34.704	27.83	4.77	60	1.70	1.70	30.0

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/110/62	29/9/62	2000 G	41 48 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
4077	5.0	7.2	19	4	16	8	6	7	19	3	22	6	1015.0	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	10.68	34.973	26.83	***	***	0.40	***	***
1	23	10.65	34.962	26.83	***	***	***	***	***
1	45	10.66	34.961	26.82	***	***	***	***	***
1	66	10.61	34.952	26.83	***	***	***	***	***
1	88	10.61	34.947	26.82	***	***	0.41	***	***
1	132	10.58	34.944	26.83	***	***	***	***	***
1	175	10.54	34.937	26.83	***	***	0.44	***	***
1	263	10.02	34.826	26.83	***	***	***	***	***
1	437	9.67	34.768	26.85	***	***	***	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/111/62	30/9/62	0800 G	43 10 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
3948	4.4	6.7	25	4	16	8	7	7	25	3	25	4	1010.5	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	9.53	34.709	26.82	6.26	101	0.75	0.85	11.0
2	21	9.48	34.705	26.83	6.25	100	0.75	***	9.3
2	42	9.53	34.710	26.82	6.27	101	0.75	0.84	10.6
2	64	9.48	34.715	26.84	6.23	100	0.76	***	10.7
2	86	9.50	34.709	26.83	6.12	98	0.72	0.80	10.1
2	131	9.49	34.713	26.83	6.23	100	0.73	***	10.8
2	178	9.50	34.709	26.83	6.24	100	0.71	0.78	10.8
2	273	9.72	34.762	26.83	6.12	98	0.72	0.81	9.2
2	467	9.72	34.762	26.83	6.12	98	0.75	0.84	10.4
2	665	8.78	34.734	26.97	5.60	88	0.99	1.07	21.6
2	864	7.26	34.479	26.99	4.92	74	1.24	1.38	23.6
1	1090	4.85	34.342	27.19	4.87	70	1.57	1.75	30.9
1	1288	3.64	34.347	27.33	4.68	64	1.54	1.78	35.6
1	1484	3.08	34.428	27.44	4.21	57	1.62	1.85	34.9
1	1970	2.56	34.628	27.65	4.01	54	1.71	1.91	32.4
1	2447	2.14	34.732	27.77	4.27	56	1.62	1.74	33.6
1	2917	1.82	34.749	27.81	4.49	59	1.60	1.74	23.7
1	3378	1.92	34.721	27.82	4.48	58	1.64	1.75	30.0

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/112/62	30/9/62	2000 G	44 36 S	109 57 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
3876	6.1	8.9	32	7	16	8	7	7	32	8	27	8	1001.0	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	9.28	34.636	26.81	***	***	***	***	***
1	23	9.33	34.674	26.83	***	***	***	***	***
1	46	9.25	34.621	26.80	***	***	***	***	***
1	69	9.23	34.627	26.81	***	***	***	***	***
1	92	9.22	34.625	26.81	***	***	***	***	***
1	137	9.23	34.633	26.81	***	***	***	***	***
1	183	9.41	34.681	26.82	***	***	***	***	***
1	275	9.37	34.673	26.82	***	***	***	***	***
1	458	9.54	34.727	26.84	***	***	***	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/113/62	1/10/62	0800 G	45 18 S	108 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
3840	7.8	8.9	32	7	16	8	8	*	32	6	32	6	1035.0	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	9.45	34.702	26.83	6.15	99	0.70	0.98	10.8
2	24	9.42	34.705	26.84	6.15	99	0.68	***	9.4
2	49	9.45	34.707	26.84	6.23	100	0.70	1.10	10.2
2	73	9.42	34.708	26.84	6.19	99	0.71	***	11.5
2	97	9.43	34.702	26.83	6.16	99	0.71	1.01	10.9
2	145	9.43	34.699	26.83	6.18	99	0.74	***	10.3
2	194	9.38	34.708	26.85	6.15	99	0.71	1.07	11.6
2	290	9.43	34.711	26.84	6.10	98	0.71	1.08	10.4
2	484	9.48	34.724	26.84	5.95	95	0.73	1.11	13.5
2	678	8.27	34.561	26.91	5.36	83	1.00	1.21	34.1
2	871	6.29	34.407	27.07	4.81	71	1.35	1.76	24.5
1	1093	4.14	34.332	27.26	4.72	66	1.67	1.98	31.1
1	1292	3.33	34.379	27.38	4.42	60	1.86	2.20	33.6
1	1491	2.85	34.477	27.50	4.06	55	1.82	2.31	31.1
1	1988	2.50	34.669	27.69	4.06	55	1.69	2.15	31.1
1	2485	2.19	34.741	27.77	4.42	59	1.66	1.91	30.0
1	2981	1.67	34.735	27.81	4.52	59	1.65	1.83	29.3
1	3478	1.31	34.720	27.82	4.60	60	1.69	2.01	29.9

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/115/62	2/10/62	1000 G	43 12 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
4023	4.4	7.2	28	4	16	8	6	7	28	3	30	5	995.0	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	9.50	34.750	26.86	***	***	***	***	***
1	25	9.42	34.733	26.86	***	***	***	***	***
1	50	9.46	34.731	26.85	***	***	***	***	***
1	75	9.41	34.733	26.86	***	***	***	***	***
1	100	9.44	34.729	26.85	***	***	***	***	***
1	150	9.43	34.730	26.86	***	***	***	***	***
1	200	9.45	34.730	26.85	***	***	***	***	***
1	300	9.44	34.727	26.85	***	***	***	***	***
1	500	9.47	34.729	26.85	***	***	***	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/116/62	3/10/62	0800 G	41 47 S	109 58 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
4296	5.0	7.8	25	4	16	8	6	7	25	4	22	5	980.0	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	9.91	34.839	26.86	6.15	100	0.78	0.87	8.2
2	25	9.90	34.822	26.85	6.05	98	0.80	***	10.8
2	50	9.92	34.824	26.85	6.19	101	0.76	0.91	8.3
2	75	9.88	34.824	26.85	6.14	100	0.76	***	14.8
2	100	9.89	34.822	26.85	6.09	99	0.80	0.87	9.3
2	150	9.88	34.821	26.85	6.10	99	0.78	***	9.5
2	200	9.90	34.826	26.85	6.09	99	0.79	0.81	4.8
2	300	9.91	34.823	26.85	6.03	98	0.78	0.81	7.7
2	500	9.28	34.708	26.86	5.56	89	1.00	1.03	12.8
2	700	8.26	34.574	26.92	5.34	83	1.19	1.23	17.1
2	900	6.42	34.442	27.08	4.70	70	1.62	1.60	24.9
1	1054	4.51	34.366	27.25	4.64	66	1.86	1.86	30.5
1	1247	3.53	34.383	27.36	4.41	61	1.99	2.07	34.5
1	1442	3.02	34.468	27.48	4.00	55	2.08	2.13	37.1
1	1934	2.55	34.658	27.67	3.86	52	1.91	1.98	35.4
1	2431	2.21	34.749	27.78	4.38	58	1.86	1.88	33.8
1	2930	1.68	34.752	27.82	4.46	59	1.86	1.90	32.6
1	3430	1.23	34.729	27.83	4.64	60	1.88	1.86	34.2
1	3930	0.94	34.715	27.84	4.68	60	1.93	2.06	34.5

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/117/62	3/10/62	2000 G	40 24 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
4389	6.7	7.8	23	7	16	8	7	7	23	6	24	8	980.0	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	10.36	34.951	26.87	***	***	***	***	***
1	23	10.30	34.889	26.83	***	***	***	***	***
1	46	10.33	34.889	26.83	***	***	***	***	***
1	69	10.31	34.892	26.83	***	***	***	***	***
1	92	10.30	34.888	26.83	***	***	***	***	***
1	138	10.29	34.888	26.83	***	***	***	***	***
1	184	10.28	34.925	26.86	***	***	***	***	***
1	276	10.28	34.886	26.83	***	***	***	***	***
1	460	9.66	34.854	26.92	***	***	***	***	***

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/124/62	4/10/62	0800 G	38 54 S	109 57 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
4296	7.8	10.3	22	5	16	8	4	8	22	5	22	4	1005.8	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	***	35.317	***	5.73	***	0.48	0.60	2.7
2	25	***	35.303	***	5.62	***	0.44	***	2.3
2	50	***	35.301	***	5.70	***	0.44	0.59	***
2	75	***	35.323	***	5.70	***	0.47	***	2.5
2	100	***	35.301	***	5.65	***	0.47	0.60	1.2
2	150	***	35.316	***	5.62	***	0.47	***	2.4
2	200	***	35.238	***	5.58	***	0.50	0.62	3.2
2	300	***	35.113	***	5.75	***	0.63	0.75	4.8
2	500	***	34.739	***	5.53	***	1.00	1.05	12.7
2	700	8.73	34.634	26.89	5.39	85	1.18	1.24	13.8
2	900	7.15	***	***	5.17	***	1.11	1.19	12.4
1	970	6.24	34.443	27.10	4.65	69	1.69	1.72	18.3
1	1162	4.25	34.395	27.30	4.30	60	1.99	1.98	30.3
1	1355	3.28	***	***	3.94	***	2.11	2.08	26.6
1	1850	2.63	34.804	27.78	3.73	50	2.12	2.14	27.5
1	2345	2.25	34.735	27.76	4.13	55	1.94	1.98	30.9
1	2845	1.78	34.750	27.81	4.36	57	1.94	1.96	28.2
1	3345	1.31	34.719	27.82	4.50	58	1.98	1.96	22.5
1	3845	0.93	34.717	27.84	4.63	59	1.85	1.86	29.6

STATION	DATE	TIME	LATITUDE	LONGITUDE
Dm 3/125/62	5/10/62	1100 G	33 30 S	110 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
2743	10.0	13.3	20	6	16	6	8	7	20	6	20	5	1022.0	*	*	*

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	15.70	35.706	26.38	5.47	100	0.30	0.41	0.3
2	23	15.68	35.711	26.38	5.51	101	0.20	***	0.2
2	47	15.60	35.700	26.39	5.47	100	0.37	0.33	0.1
2	70	15.50	35.687	26.41	5.45	100	0.30	***	0.0
2	93	15.40	35.667	26.41	5.46	99	0.34	0.36	0.4
2	141	14.39	35.484	26.50	5.30	94	0.42	***	1.0
2	187	12.93	35.231	26.60	5.36	92	0.59	0.65	3.1
2	281	10.65	35.050	26.90	5.39	88	0.84	0.85	7.4
2	469	9.10	34.687	26.88	5.41	85	1.10	1.11	15.0
1	669	7.78	34.545	26.97	4.98	76	1.34	1.44	21.4
1	859	4.58	34.369	27.24	4.53	64	1.87	1.96	29.6
1	1050	3.80	34.487	27.42	3.63	50	2.09	2.38	33.8
1	1241	3.16	34.536	27.52	3.62	49	2.11	2.33	31.1
1	1432	2.86	34.613	27.61	3.52	47	2.07	2.15	34.7
1	1909	2.34	34.709	27.73	3.69	49	2.02	2.07	32.6

DATA

PART 2

HYDROLOGY

SURFACE SAMPLING

VESSEL	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	SAMPLING METHOD
11	3	102	62	9	25	0900	G	32 00 S	111 51 E	16.4	35.74	22	4	23	1	24	1		1017.4	1
11	3	103	62	9	26	0830	G	32 00 S	110 02 E	19.4	35.60	18	6	18	4	17	4		1020.7	1
11	3	104	62	9	26	2015	G	33 24 S	110 00 E	16.0	35.71	22	4	22	3	20	1		1022.0	1
11	3	105	62	9	27	0800	G	34 48 S	110 00 E	13.4	35.39	20	1	20	1	22	1		1021.0	1
11	3	106	62	9	27	2000	G	36 12 S	110 00 E	13.0	35.33	30	3	26	2	25	4		1017.0	1
11	3	107	62	9	28	0800	G	37 36 S	110 00 E	13.7	35.43	30	3	32	2	31	1		1010.0	1
11	3	108	62	9	28	2000	G	39 00 S	110 02 E	13.4	35.40	28	4	28	3	32	1		1004.5	1
11	3	109	62	9	29	0800	G	40 24 S	110 01 E	10.4	34.89	22	4	22	3	24	4		1008.0	1
11	3	110	62	9	29	2000	G	41 48 S	110 00 E	10.7	34.97	19	4	19	3	22	6		1015.0	1
11	3	111	62	9	30	0800	G	43 10 S	110 00 E	9.5	34.71	25	4	25	3	25	4		1010.5	1
11	3	112	62	9	30	2000	G	44 36 S	109 57 E	9.3	34.64	32	7	32	8	27	8		1001.0	1
11	3	113	62	10	1	0800	G	45 18 S	108 30 E	9.5	34.70	32	7	32	6	32	6		1035.0	1
11	3	115	62	10	2	1000	G	43 12 S	110 00 E	9.5	34.75	28	4	28	3	30	5		995.0	1
11	3	116	62	10	3	0800	G	41 47 S	109 58 E	9.9	34.84	25	4	25	4	22	5		980.0	1
11	3	117	62	10	3	2000	G	40 24 S	110 00 E	10.4	34.95	23	7	23	6	24	8		980.0	1
11	3	118	62	10	4	0200	H	40 12 S	110 00 E	10.6	34.93	22	6	22	4	25	4	01	1001.0	1
11	3	119	62	10	4	0300	H	39 59 S	109 59 E	10.5	34.91	21	5	21	4	24	4	01	1001.9	1
11	3	120	62	10	4	0400	H	39 47 S	109 59 E	10.5	34.91	22	6	22	4	24	4	02	1002.0	1
11	3	121	62	10	4	0500	H	39 24 S	109 58 E	12.9	35.32	24	5	24	3	24	1	01	1004.0	1
11	3	122	62	10	4	0600	H	39 09 S	109 58 E	13.2	35.37	22	5	22	3	22	1	01	1004.0	1
11	3	123	62	10	4	0700	H	38 58 S	109 57 E	13.4	35.39	22	5	22	3	22	1	01	1005.5	1
11	3	124	62	10	4	0800	G	38 54 S	109 57 E		35.32	22	5	22	5	22	4		1005.8	1
11	3	125	62	10	5	1100	G	33 30 S	110 03 E	15.7	35.71	20	6	20	6	20	5		1022.0	1

DATA

PART 3

PRIMARY PRODUCTION

EXPLANATION OF HEADINGS

Part 3	Primary Production
STATION	Gives the station identification. For example, Dm3/102/62 signifies the 102nd station worked from Diamantina in 1962, on her 3rd cruise for that year
DATE	Given as day/month/year
TIME	Given in Zone Time (Table 2, p. 16)
LATITUDE LONGITUDE	Given in degrees and minutes
INCUBATION METHOD	IN SITU: Incubation in situ SIMULATED IN SITU: Incubation in a simulated in situ incubator using sunlight and blue glass filters ARTIFICIAL CONSTANT LIGHT 0: Incubation in artificial light constant at 1100 ft candles
ACTIVITY CPM	Activity of the ^{14}C stock used in counts per minute
BACKGROUND	Activity in counts per minute
DEPTH	Depth of sampling in metres
LIGHT	The counts per minute of the filter from the clear bottle
DARK	The counts per minute of the filter from the dark bottle. If this is more than 50 and also more than 10% of the LIGHT count, it is assumed to be aberrant and the symbol "B" is placed after it

DARK USED	Usually the same as DARK. However, if this is aberrant or not done, the mean of the other DARK counts at that station which are not aberrant is used, and the symbol "E" placed after it
NETT	LIGHT minus DARK USED. If this is negative it is assumed to be equal to zero for further calculations and the symbol "G" is placed after it
INC. PER.	Incubation period
PRODUCTION A	For artificial constant light this is calculated rate of production at the depth sampled per hour of incubation. For <u>in situ</u> and simulated <u>in situ</u> it is the production per day and this is assumed to be twice the production from noon to sunset. Where this value is missing, the symbol "I" is placed after it, and for the calculation of PRODUCTION B it is assumed to have the same value as at the next depth sampled below it
PRODUCTION B	The integrated rate of production per day under one square metre of sea surface from the surface to the depth given. For artificial constant light, the production per day is assumed to equal 10 times the hourly production
**	Indicates no data available

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/102/62	25/ 9/62	0900 H	32 00 S	111 51 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	1199	30	30	1169	04.00	00.86	00.00
25	1337	27	27	1310	04.00	00.96	00.23
50	1034	22	22	1012	04.00	00.74	00.44
75	549	14	14	535	04.00	00.39	00.58
100	1052	37	37	1015	04.00	00.74	00.72
150	78	36	36	42	04.00	00.03	00.91

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/102/62	25/ 9/62	1115 H	32 00 S	111 51 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
IN SITU	5 NOON - SUNSET	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. DAYS	PRODUCTION A MG.C/DAY/CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	655	28	28	627	00.50	03.67	00.00
14	615	25	25	590	00.50	03.46	00.05
32	710	22	22	688	00.50	04.03	00.12
42	637	23	23	614	00.50	03.60	00.16
48	490	107 B	24 E	466	00.50	02.73	00.18
61	291	201 B	24 E	267	00.50	01.56	00.21

B ABERRANT VALUE, NOT USED
E MEAN NON-ABERRANT DARK USED

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/102/62	25/ 9/62	1115 H	32 00 S	111 51 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
SIMULATED IN SITU	7 NOON - SUNSET	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. DAYS	PRODUCTION A MG.C/DAY/CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	860	28	28	832	00.50	04.87	00.00
14	611	25	25	586	00.50	03.43	00.06
32	670	22	22	648	00.50	03.80	00.13
42	434	23	23	411	00.50	02.41	00.16
48	280	107 B	21 E	259	00.50	01.52	00.17
61	130	11	11	119	00.50	00.70	00.18

B ABERRANT VALUE, NOT USED
E MEAN NON-ABERRANT DARK USED

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/103/62	26/ 9/62	0930 H	32 00 S	110 02 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	933	35	35	898	04.00	00.66	00.00
25	583	40	40	543	04.00	00.40	00.13
50	566	91 B	34 E	532	04.00	00.39	00.23
75	122	26	26	96	04.00	00.07	00.29
100	46	33	33	13	04.00	00.01	00.30
150	37	38	38	- 1 G	04.00	00.00	00.30

B ABERRANT VALUE, NOT USED
E MEAN NON-ABERRANT DARK USED
G NEGATIVE VALUE, ASSUMED ZERO

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/104/62	26/ 9/62	2030 H	33 24 S	110 00 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	459	85 B	35 E	424	04.00	00.31	00.00
25	359	47	47	312	04.00	00.23	00.07
50	465	48	48	417	04.00	00.31	00.14
75	494	34	34	460	04.00	00.34	00.22
100	426	56 B	35 E	391	04.00	00.29	00.30
150	70	31	31	39	04.00	00.03	00.38
200	19	16	16	3	04.00	00.00	00.39

B ABERRANT VALUE, NOT USED
E MEAN NON-ABERRANT DARK USED

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/105/62	27/ 9/62	0815 H	34 48 S	110 00 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	617	25	25	592	04.00	00.43	00.00
25	1174	25	25	1149	04.00	00.84	00.16
50	819	16	16	803	04.00	00.59	00.34
75	779	15	15	764	04.00	00.56	00.48
100	375	17	17	358	04.00	00.26	00.58
150	65	20	20	45	04.00	00.03	00.65
200	45	33	33	12	04.00	00.01	00.66

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/106/62	27/ 9/62	2000 H	36 12 S	110 00 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	477	30	30	447	04.00	00.33	00.00
25	455	22	22	433	04.00	00.32	00.08
50	477	22	22	455	04.00	00.33	00.16
75	437	6	6	431	04.00	00.32	00.24
100	165	19	19	146	04.00	00.11	00.29
150	36	7	7	29	04.00	00.02	00.32
200	13	8	8	5	04.00	00.00	00.33

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/107/62	28/ 9/62	0845 H	37 36 S	110 00 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	1108	43	43	1065	04.00	00.78	00.00
25	1183	65	65	1118	04.00	00.82	00.20
50	873	36	36	837	04.00	00.61	00.38
75	1150	36	36	1114	04.00	00.82	00.56
100	1030	48	48	982	04.00	00.72	00.75
150	574	46	46	528	04.00	00.39	01.03
200	900	35	35	865	04.00	00.63	01.29

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/107/62	28/ 9/62	1115 H	37 36 S	110 00 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
SIMULATED IN SITU	7 NOON - SUNSET	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. DAYS	PRODUCTION A MG.C/DAY/CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	1023	30	30	993	00.50	05.82	00.00
15	840	27	27	813	00.50	04.76	00.08
35	1103	36	36	1067	00.50	06.25	00.19
45	770	25	25	745	00.50	04.36	00.24
55	516	33	33	483	00.50	02.83	00.28
65	258	28	28	230	00.50	01.35	00.30

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/108/62	28/ 9/62	2015 H	39 00 S	110 02 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	485	32	32	453	04.00	00.33	00.00
25	407	25	25	382	04.00	00.28	00.08
50	471	22	22	449	04.00	00.33	00.16
75	486	18	18	468	04.00	00.34	00.24
100	513	36	36	477	04.00	00.35	00.33
150	481	20	20	461	04.00	00.34	00.50
200	37	38	38	- 1 G	04.00	00.00	00.59

G NEGATIVE VALUE, ASSUMED ZERO

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/109/62	29/ 9/62	0630 H	40 24 S	110 01 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	538	33	33	505	04.00	00.37	00.00
25	504	22	22	482	04.00	00.35	00.09
50	512	23	23	489	04.00	00.36	00.18
75	528	22	22	506	04.00	00.37	00.27
100	458	28	28	430	04.00	00.31	00.36
150	400	22	22	378	04.00	00.28	00.51
200	175	24	24	151	04.00	00.11	00.61

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/110/62	29/ 9/62	2015 H	41 48 S	110 00 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	240	41	41	199	04.00	00.15	00.00
25	287	20	20	267	04.00	00.20	00.04
50	309	36	36	273	04.00	00.20	00.09
75	300	18	18	282	04.00	00.21	00.14
100	314	34	34	280	04.00	00.21	00.19
150	262	22	22	240	04.00	00.18	00.29
200	167	23	23	144	04.00	00.11	00.36

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/111/62	30/ 9/62	0830 H	43 10 S	110 01 E

INCUBATION METHOD	PERIOD	14C STUCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	619	31	31	588	04.00	00.43	00.00
25	534	30	30	504	04.00	00.37	00.10
50	601	20	20	581	04.00	00.43	00.20
75	591	21	21	570	04.00	00.42	00.31
100	593	21	21	572	04.00	00.42	00.42
150	488	17	17	471	04.00	00.34	00.61
200	534	24	24	510	04.00	00.37	00.79

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/III/62	30/ 9/62	0830 H	43 10 S	110 01 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
SIMULATED IN SITU	7 NOON - SUNSET	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. DAYS	PRODUCTION A MG.C/DAY/CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	283	24	24	259	00.50	01.52	00.00
10	497	24	24	473	00.50	02.77	00.02
27	419	24	24	395	00.50	02.31	00.06
54	283	20	20	263	00.50	01.54	00.11
69	214	25	25	189	00.50	01.11	00.13

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/112/62	30/ 9/62	2000 H	44 36 S	109 57 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	3 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	328	29	29	299	03.00	00.29	00.00
25	356	23	23	333	03.00	00.33	00.08
50	317	17	17	300	03.00	00.29	00.16
75	311	19	19	292	03.00	00.29	00.23
100	302	18	18	284	03.00	00.28	00.30
150	316	12	12	304	03.00	00.30	00.45
200	373	18	18	355	03.00	00.35	00.61

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/113/62	1/10/62	0945 H	45 18 S	108 30 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	403	48	48	355	04.00	00.26	00.00
25	503	46	46	457	04.00	00.33	00.07
50	411	29	29	382	04.00	00.28	00.15
75	722	29	29	693	04.00	00.51	00.25
100	352	29	29	323	04.00	00.24	00.34
150	376	16	16	360	04.00	00.26	00.47
200	305	34	34	271	04.00	00.20	00.59

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/114/62	1/10/62	2030 H	44 36 S	110 00 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	500	27	27	473	04.00	00.35	00.00
25	456	31	31	425	04.00	00.31	00.08
50	568	37	37	531	04.00	00.39	00.17
75	508	24	24	484	04.00	00.35	00.26
100	484	64 B	26 E	458	04.00	00.34	00.35
150	487	31	31	456	04.00	00.33	00.52
200	232	41	41	191	04.00	00.14	00.64
300	39	21	21	18	04.00	00.01	00.72
400	40	19	19	21	04.00	00.02	00.74
500	26	5	5	21	04.00	00.02	00.76

B ABERRANT VALUE, NOT USED
E MEAN NON-ABERRANT DARK USED

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/115/62	2/10/62	2000 H	43 12 S	110 00 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	278	38	38	240	04.00	00.18	00.00
25	218	9	9	209	04.00	00.15	00.04
50	187	14	14	173	04.00	00.13	00.08
75	181	14	14	167	04.00	00.12	00.11
100	213	40	40	173	04.00	00.13	00.14
150	202	10	10	192	04.00	00.14	00.21
200	192	25	25	167	04.00	00.12	00.28

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/115/62	2/10/62	1115 H	43 12 S	110 00 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
IN SITU	5 NOON - SUNSET	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. DAYS	PRODUCTION A MG.C/DAY/CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	**	17	**	**	00.50	** I	00.00
12	230	43	43	187	00.50	01.10	00.01
26	343	24	24	319	00.50	01.87	00.03
38	397	18	18	379	00.50	02.22	00.05
49	402	18	18	384	00.50	02.25	00.07
59	382	7	7	375	00.50	02.20	00.09

I VALUE ASSUMED EQUAL NEXT DEPTH

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/115/62	2/10/62	1115 H	43 12 S	110 00 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
SIMULATED IN SITU	7 NOON - SUNSET	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. DAYS	PRODUCTION A MG.C/DAY/CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	300	17	17	283	00.50	01.66	00.00
12	336	43	43	293	00.50	01.72	00.02
26	423	24	24	399	00.50	02.34	00.05
38	339	18	18	321	00.50	01.88	00.07
49	237	18	18	219	00.50	01.28	00.09
59	140	7	7	133	00.50	00.78	00.10

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/116/62	3/10/62	1000 H	41 47 S	109 58 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	15 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	332	39	39	293	04.33	00.20	00.00
25	292	8	8	284	04.33	00.19	00.05
50	296	13	13	283	04.33	00.19	00.10
75	284	7	7	277	04.33	00.19	00.15
100	315	10	10	305	04.33	00.21	00.20
150	323	12	12	311	04.33	00.21	00.31
200	337	16	16	321	04.33	00.22	00.42

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/117/62	3/10/62	2030 H	40 24 S	110 00 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	NO. 11	8.38 MILLION	15 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	213	11	11	202	04.00	00.15	00.00
25	174	15	15	159	04.00	00.12	00.03
50	241	30	30	211	04.00	00.15	00.06
75	247	10	10	237	04.00	00.17	00.10
100	208	46	46	162	04.00	00.12	00.14
150	212	25	25	187	04.00	00.14	00.21
200	166	2	2	164	04.00	00.12	00.28

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/124/62	4/10/62	1000 H	38 54 S	109 57 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	5 HOURS	NO. 11	8.38 MILLION	10 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	887	63	63	824	04.83	00.50	00.00
25	673	26	26	647	04.83	00.39	00.11
50	727	17	17	710	04.83	00.43	00.21
75	1841	15	15	1826	04.83	01.11	00.40
100	1103	15	15	1088	04.83	00.66	00.62
150	895	17	17	878	04.83	00.53	00.92
200	219	16	16	203	04.83	00.12	01.08

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/125/62	5/10/62	1415 H	33 30 S	110 03 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	3 HOURS	NO. 11	8.38 MILLION	15 CPM

DEPTH M	LIGHT CPM	DARK CPM	DARK USED CPM	NETT CPM	INC. PER. HOURS	PRODUCTION A MG.C/HR./CU.M.	PRODUCTION B G.C/DAY/SQ.M.
0	695	35	35	660	03.00	00.64	00.00
25	619	24	24	595	03.00	00.58	00.15
50	604	30	30	574	03.00	00.56	00.29
75	508	21	21	487	03.00	00.48	00.42
100	384	40	40	344	03.00	00.34	00.52
150	31	9	9	22	03.00	00.02	00.61
200	32	24	24	8	03.00	00.01	00.62
300	21	10	10	11	02.15	00.01	00.63
400	15	17	17	- 2 G	02.15	00.00	00.64
500	25	31	31	- 6 G	02.15	00.00	00.64

DATA

PART 4

PIGMENTS

EXPLANATION OF HEADINGS

Part 4	Pigments
STATION	Gives the station identification. For example, Dm3/102/62 signifies the 102nd station worked from Diamantina in 1962, on her 3rd cruise for that year
DATE	Given as day/month/year
TIME	Given in Zone Time (Table 2, p. 16)
LATITUDE LONGITUDE	Given in degrees and minutes
DEPTH	Actual sampling depth, given in metres
CHLOROPHYLL A B C	A and B given in mg/m^3 C given in $MSPU/m^3$
ASTACIN NON-ASTACIN	Given in $MSPU/m^3$

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/102/62	25/ 9/62	0900 G	32 00 S	111 51 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.22	0.04	0.51	0.07	0.03
50	0.24	0.07	0.65	0.09	0.02
75	0.25	0.06	0.47	0.07	0.05
100	0.23	0.04	0.35	0.06	0.05
150	0.09	0.05	0.35	0.07	- 0.01

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/103/62	26/ 9/62	0830 G	32 00 S	110 02 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.19	0.08	0.51	0.09	0.00
25	0.22	0.08	0.37	0.08	0.01
50	0.20	0.09	0.48	0.09	- 0.00
75	0.17	0.07	0.60	0.09	0.01
100	0.10	0.06	0.58	0.10	- 0.04
150	0.08	0.06	0.45	0.08	- 0.01

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/104/62	26/ 9/62	2015 G	33 24 S	110 00 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.26	0.15	1.06	0.11	- 0.03
25	0.26	0.07	0.55	0.09	0.04
50	0.23	0.06	0.56	0.09	0.01
75	0.23	0.08	0.58	0.08	0.01
100	0.28	0.04	0.55	0.07	0.08
150	0.09	0.05	0.33	0.06	0.00
200	0.05	0.05	0.31	0.06	- 0.01

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/105/62	27/ 9/62	0800 G	34 48 S	110 00 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.27	0.08	0.66	0.08	0.04
25	0.28	0.08	0.57	0.08	0.04
50	0.21	0.06	0.43	0.06	0.04
75	0.25	0.07	0.49	0.07	0.04
100	0.14	0.06	0.45	0.07	0.01
150	0.07	0.03	0.32	0.07	0.00
200	0.05	0.00	0.73	0.07	- 0.01

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/106/62	27/ 9/62	2000 G	36 12 S	110 00 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.19	0.05	0.39	0.07	0.03
25	0.25	0.08	0.54	0.09	0.03
50	0.34	0.07	0.77	0.09	0.06
75	0.29	0.07	0.59	0.08	0.03
100	0.14	0.04	0.34	0.07	0.01
150	0.12	0.05	0.44	0.07	- 0.01
200	0.05	0.04	0.35	0.07	- 0.00

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/107/62	28/ 9/62	0800 G	37 36 S	110 00 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.34	0.16	1.75	0.09	- 0.00
25	0.27	0.04	0.43	0.07	0.04
50	0.27	0.09	0.54	0.09	0.00
75	0.35	0.13	0.85	0.12	0.01
100	0.25	0.07	0.58	0.08	0.01
150	0.19	0.05	0.35	0.05	0.04
200	0.22	0.07	0.35	0.06	0.02

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/108/62	28/ 9/62	2000 G	39 00 S	110 02 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.19	0.06	0.33	0.06	0.02
25	0.25	0.07	0.55	0.09	0.01
50	0.23	0.09	0.48	0.09	0.01
75	0.19	0.04	0.36	0.06	0.02
100	0.25	0.04	0.36	0.06	0.05
150	0.35	0.12	0.92	0.14	- 0.02
200	0.09	0.04	0.43	0.10	- 0.04

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/109/62	29/ 9/62	0800 G	40 24 S	110 01 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.17	0.05	0.37	0.06	0.03
25	0.14	0.04	0.34	0.05	0.02
50	0.11	0.03	0.13	0.02	0.02
75	0.15	0.06	0.42	0.07	0.00
100	0.16	0.07	0.42	0.07	0.01
150	0.13	0.06	0.37	0.07	0.00
200	0.11	0.03	0.27	0.04	0.01

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/110/62	29/ 9/62	2000 G	41 48 S	110 00 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.19	0.05	0.51	0.07	0.02
25	0.21	0.09	0.60	0.09	- 0.00
50	0.26	0.10	0.64	0.10	0.01
75	0.23	0.10	0.61	0.09	0.01
200	0.17	0.08	0.55	0.10	- 0.02

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/111/62	30/ 9/62	0800 G	43 10 S	110 00 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.21	0.08	0.66	0.09	0.01
25	0.18	0.07	0.44	0.07	0.01
50	0.27	0.10	0.70	0.11	- 0.01
75	0.24	0.11	0.72	0.11	- 0.01
100	0.25	0.11	0.66	0.11	0.01
200	0.25	0.09	0.57	0.09	0.00

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/112/62	30/ 9/62	2000 G	44 36 S	109 57 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.13	0.05	0.19	0.05	0.01
25	0.19	0.04	0.38	0.05	0.03
50	0.16	0.03	0.15	0.03	0.04
75	0.17	0.05	0.41	0.06	.01
100	0.19	0.08	0.50	0.08	.00
150	0.27	0.08	0.57	0.08	0.02
200	0.13	0.04	0.17	0.04	0.01

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/113/62	1/10/62	0800 G	45 18 S	108 30 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
25	0.28	0.16	1.09	0.17	- 0.04
75	0.21	0.09	0.56	0.10	- 0.01
100	0.16	0.09	0.43	0.08	- 0.00
150	0.20	0.09	0.87	0.14	- 0.04
200	0.21	0.10	0.94	0.14	- 0.06

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/114/62	1/10/62	2000 G	44 36 S	110 00 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.24	0.09	0.48	0.08	0.03
25	0.16	0.06	0.32	0.06	0.02
100	0.19	0.05	0.21	0.06	0.03
150	0.14	0.06	0.29	0.05	0.02
200	0.23	0.12	0.83	0.13	- 0.03
300	0.09	0.07	0.43	0.09	- 0.02
400	0.05	0.02	0.05	0.07	- 0.02
500	0.05	0.03	0.47	0.09	- 0.02

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/115/62	2/10/62	1000 G	43 12 S	110 00 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.14	0.07	0.35	0.06	0.01
25	0.14	0.05	0.29	0.03	0.02
50	0.20	0.08	0.59	0.10	- 0.01
75	0.13	0.05	0.31	0.05	0.02
100	0.12	0.04	0.20	0.05	0.01
150	0.18	0.08	0.65	0.10	- 0.02
200	0.14	0.06	0.43	0.07	0.00

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/116/62	3/10/62	0800 G	41 47 S	109 58 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.19	0.08	0.54	0.08	0.02
25	0.12	0.05	0.34	0.07	0.02
50	0.07	0.04	0.20	0.05	- 0.01
75	0.12	0.06	0.49	0.09	- 0.00
100	0.10	0.08	0.32	0.06	- 0.01
150	0.07	0.04	0.20	0.05	0.01
200	0.09	0.04	0.34	0.06	0.01

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/117/62	3/10/62	2000 G	40 24 S	110 00 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.24	0.18	1.15	0.17	- 0.05
25	0.14	0.11	0.69	0.11	- 0.01
50	0.14	0.11	0.72	0.12	- 0.01
75	0.12	0.08	0.61	0.11	- 0.02
100	0.09	0.05	0.39	0.07	0.01
150	0.12	0.10	0.69	0.11	- 0.02
200	0.25	0.17	1.11	0.14	- 0.03

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/124/62	4/10/62	0800 G	38 54 S	109 57 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.24	0.11	0.64	0.11	0.01
25	0.22	0.09	0.63	0.09	0.01
50	0.20	0.10	0.70	0.09	- 0.02
75	0.23	0.06	0.49	0.08	0.04
100	0.26	0.11	0.84	0.12	- 0.01
150	0.30	0.09	0.91	0.11	0.02
200	0.09	0.04	0.36	0.06	0.00

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/125/62	5/10/62	1100 G	33 30 S	110 03 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.19	0.02	0.22	0.03	0.07
25	0.30	0.09	0.63	0.10	0.01
50	0.35	0.11	0.73	0.11	0.02
75	0.22	0.04	0.22	0.04	0.06
100	0.24	0.06	0.47	0.08	0.02
150	0.07	0.03	0.31	0.06	- 0.01
200	0.07	0.06	0.35	0.07	- 0.01
300	0.03	0.01	0.25	0.05	- 0.01
400	0.04	0.05	0.38	0.07	- 0.02
500	0.04	0.05	0.42	0.08	- 0.02

DATA

PART 5

ZOOPLANKTON

EXPLANATION OF SYMBOLS

Part 5	Zooplankton
x	Samples given to Indian Ocean Biological Centre, Cochin, India
*	Predominantly gelatinous organisms
( )	Including exceptionally large organisms
+	Sampler open during recovery

A blank indicates no data available

VERTICAL HAULS 200-0 m : INDIAN OCEAN STANDARD NET

STATION POSITION	DATE	TIME	ESTIMATED VOLUME FILTERED (m^3)	TOTAL WEIGHT (g)	BIOMASS (mg/m^3)
Dm3/102/62 32°99'S. 111°51'E.	25/9/62	2021	340	22.84	67
Dm3/104/62 33°24'S. 110°00'E.	26/9/62	2115 2145	200 231	8.12 19.51	40 84 x
Dm3/105/62 34°48'S. 110°00'E.	27/9/62	1035 1058	200 200	2.06 2.36	11 12 x
Dm3/106/62 36°12'S. 110°00'E.	27/9/62	2107 2133	221 221	10.45 8.08	47 37 x
Dm3/107/62 37°36'S. 110°00'E.	28/9/62	1045 1100	213 242	3.25 6.24	15 26 x
Dm3/108/62 39°00'S. 110°02'E.	28/9/62	2125	231	4.45	19
Dm3/109/62 40°24'S. 110°01'E.	29/9/62	1120	240	5.78	25
Dm3/110/62 41°48'S. 110°00'E.	29/9/62	2130 2150	240 230	11.05 (72.91*) 7.78	46 (303*) 34 x

VERTICAL HAULS 200-0 m : INDIAN OCEAN STANDARD NET

STATION POSITION	DATE	TIME	ESTIMATED VOLUME FILTERED (m^3)	TOTAL WEIGHT (g)	BIOMASS (mg/m^3)
Dm3/111/62	30/9/62	1100	260	1.68	7
43°10'S. 110°00'E.		1120	260	2.87	11 x
Dm3/114/62	1/10/62	2100	200	6.81	34
44°36'S. 110°00'E.		2130	213	11.81	55 x
Dm3/115/62	2/10/62	2130	200	4.64 (51.34*)	23 (257*)
43°12'S. 110°00'E.					
Dm3/125/62	5/10/62	1215	200	5.63	28
33°30'S. 110°03'E.		1230	200	5.66	28 x

HORIZONTAL TOWS : CLARKE-BUMPUS SAMPLER

STATION POSITION	DATE	TIME	DEPTH RANGE (m)	STRATUM MODE (m)	VOLUME FILTERED (m^3)	BIOMASS (mg/m^3)
Dm3/102/62 32°00'S. 111°51'E.	25/9/62	2105	0-10	0	22.0	130
		"	70	70	13.1	54
		"	130	130	16.2	46
		"	300	300	15.5	10
Dm3/104/62 33°24'S. 110°00'E.	26/9/62	0030	0-10	0	23.8	53
		"	45-10	45	48.0	4
Dm3/105/62 34°48'S. 110°00'E.	27/9/62	1150	0-10	0	25.0	18
		"	56-64	60	23.1	11
		"	110-125	110	19.2	18
		"	200-230	210	23.7	10
Dm3/106/62 36°12'S. 110°00'E.	27/9/62	2355	0-10	0	18.4	46
		"	58-70	67	14.1	37
		"	100-120	120	18.2	17
		"	190-230	230	21.7	13
Dm3/107/62 37°36'S. 110°00'E.	28/9/62	1152	0-10	0	24.2	45
		"	35-65	55	22.1	9
		"	75-125	110	23.9	10
		"	150-220	200	36.8	27

HORIZONTAL TOWS : CLARKE-BUMPUS SAMPLER

STATION POSITION	DATE	TIME	DEPTH RANGE (m)	STRATUM MODE (m)	VOLUME FILTERED (m^3)	BIOMASS (mg/m^3)
Dm3/108/62 39°00'S. 110°02'E.	28/9/62	2350	0-10	0	14.1	18
		"	70	70	15.5	6
		"	130	130	16.3	15
		"	240-260	254	13.9	36
Dm3/109/62 40°24'S. 110°01'E.	29/9/62	1205	0-10	0	26.0	5
		"	40-60		18.0	13
		"	75-110	80	19.6	27
		"	150-200		25.5	17
Dm3/110/62 41°48'S. 110°00'E.	29/9/62	0007	0-10	0	25.5	44
		"	125-50 +	80	29.6	4
Dm3/111/62 43°10'S. 110°00'E.	30/9/62	1240	0-10	0	18.2	9
		"	40-60	55	17.5	5
		"	90-125	120	19.7	6
		"	160-230	210	24.7	11
Dm3/112/62 44°36'S. 109°57'E.	30/9/62	0005	0-10	0	23.9	18
		"	30-75	70	21.2	8
		"	60-125		23.3	22
		"	200-300		27.7	17

HORIZONTAL TOWS : CLARKE-BUMPUS SAMPLER

STATION POSITION	DATE	TIME	DEPTH RANGE (m)	STRATUM MODE (m)	VOLUME FILTERED (m^3)	BIOMASS (mg/m^3)
Dm3/113/62 45°18'S. 108°30'E.	1/10/62	1230	0-10	0	25.8	1
		"	45-60	50	21.4	2
		"	80-125	95	22.5	6
		"	140-230	160	28.4	8
Dm3/114/62 44°36'S. 110°00'E.	2/10/62	0015	0-10	0	27.2	33
		"	55-65	55	19.7	48
		"	110-125	115	19.5	27
		"	190-240	210	21.8	22
Dm3/115/62 43°12'S. 110°00'E.	3/10/62	0007	0-10	0	15.5	20
		"	30-45	30	22.9	5
		"	50-110	60	23.3	19
		"	100-240	100	30.6	24
Dm3/116/62 41°47'S. 109°58'E.	3/10/62	1115	0-10	0	31.8	4
Dm3/117/62 40°24'S. 110°00'E.	3/10/62	2350	0-10		25.9	15

HORIZONTAL AND OBLIQUE TOWS : CLARKE-BUMPUS SAMPLER

STATION POSITION	DATE	TIME	DEPTH RANGE (m)	STRATUM MODE (m)	VOLUME FILTERED (m^3)	BIOMASS (mg/m^3)
Dm3/124/62	4/10/62	1200	0-10	0	34.0	6
38°54'S. 109°57'E.		"	30-50	35	36.5	4
		"	40-75	60	34.6	3
		"	60-160	150	46.2	5
		"	0-200-0		70.0	9
Dm3/125/62	5/10/62	1130	0-10	0	26.9	10
33°30'S. 110°03'E.		"	25-50	30	21.1	6
			0-200-0		50.4	26

DATA

PART 6

MICRONEKTON

OBLIQUE TOWS : 5 FT ISAACS-KIDD MIDWATER TRAWL

STATION POSITION	DATE	TIME	ESTIMATED LENGTH OF COLUMN FILTERED (m)	MAX. DEPTH (m)+	DRY WEIGHT: mg for a 10,000 m* column			
					JELLY ORG.	PLANKTON ORG.	MACRO-PLANKTON ORG.	MICRO-NEKTON
Dm3/102/62 32°00'S. 111°51'E.	25/9/62	2205 2405	9908	200	496	6240	2915	1865
Dm3/104/62 38°24'S. 110°00'E.	26/9/62	2220 2410	11606	200	616	8640	4713	4847
Dm3/106/62 36°12'S. 110°00'E.	27/9/62	2155 2345	11112	200	304	5040	12336	3587
Dm3/108/62 39°30'S. 110°00'E.	28/9/62	2147 2326	10340	200	5208	4080	16906	10699
Dm3/110/62 41°48'S. 110°00'E.	29/9/62	2221 2240	9414	200	1368	2400	4366	2471
Dm3/112/62 44°36'S. 109°57'E.	30/9/62	2200 2345	10526	200	344	2040	6565	307
Dm3/114/62 44°36'S. 110°00'E.	1/10/62	2220 2355	9846	200	624	8400	5350	2464
Dm3/115/62 43°12'S. 110°00'E.	2/10/62	2215 2350	10093	200	192	3840	3789	234

+ If no data, 200 m assumed

* 10,000 m is the length of the column filtered in the time of the average tow

TABLE 3

RELATION OF WET VOLUME TO DRY WEIGHT

The displacement volume of a group of organisms (in ml) multiplied by the appropriate factor below, gives the dry weight in mg

	CONVERSION FACTOR
Gelatinous organisms (Medusae, Salps, Siphonophores)	8
Planktonic organisms	120
Micronektonic organisms	
Fishes	189
Fish larvae	162
Leptocephali	60
Cephalopods non gelatinous, small	137
non gelatinous, big	182
gelatinous	72
Macroplanktonic organisms	
Phyllosomas	29
Stomatopods	168
Amphipods - various	130
- Phronima group	43
Mysids	145
Euphausiids	149
Penaeids	158
Carids	231
Annelids	53
Pteropods (shell included)	267
Heteropods	10
Chaetognaths	56

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