

OCEANOGRAPHICAL OBSERVATIONS
IN THE INDIAN OCEAN IN 1961
H.M.A.S. *DIAMANTINA*
Cruise Dm 3/61

OCEANOGRAPHICAL CRUISE REPORT
NO. 11

DIVISION OF FISHERIES AND OCEANOGRAPHY
COMMONWEALTH SCIENTIFIC AND INDUSTRIAL
RESEARCH ORGANIZATION, AUSTRALIA 1964

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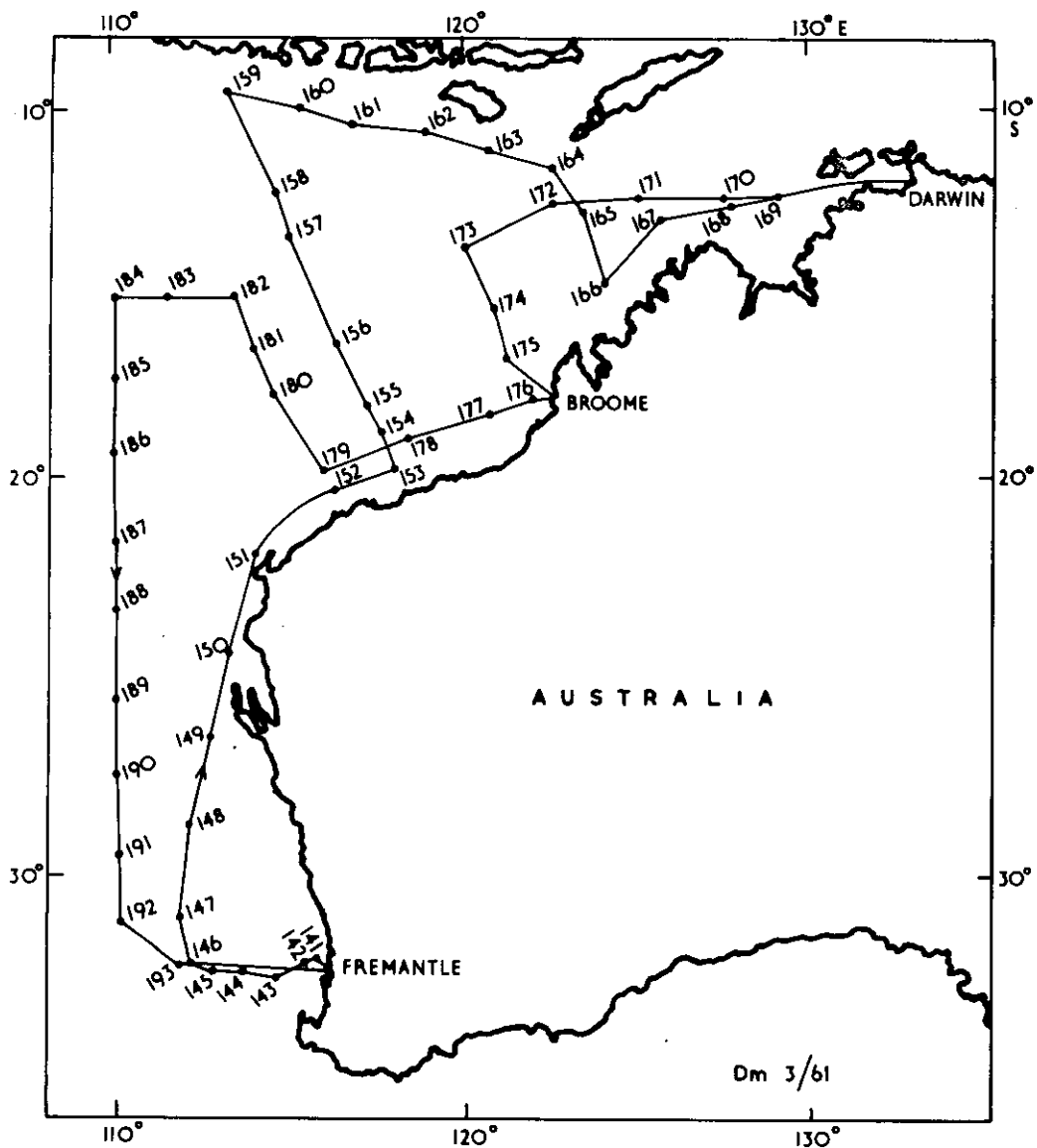


Fig. 1. - Track Chart

OCEANOGRAPHICAL CRUISE REPORT

No. 11

Oceanographical Observations in the Indian Ocean in 1961

H.M.A.S. DIAMANTINA

Cruise Dm 3/61

July 20 - August 26, 1961

I. INTRODUCTION

Data are recorded for the third cruise in 1961 of H.M.A.S. Diamantina, Royal Australian Navy frigate, in the Indian Ocean.

Objectives

The cruise was planned to investigate some factors which might limit production in the open ocean, to study the plankton of the area particularly in regions of varying productivity, and to compare zooplankton sampling methods.

Itinerary

The cruise commenced at Fremantle on July 20, worked a series of stations north to Java, occupied the SCOR-UNESCO Reference Station No.2 (see track chart, Station Dm 3/159/61), then east to Timor and Darwin, thence west and south to Broome, then west and south to the SCOR-UNESCO Reference Station No.1 (see track chart Station Dm 3/193/61), and then to Fremantle where the cruise ended on August 26.

Personnel

D. Tranter (Cruise Leader 20/7/61 - 4/8/61)
J. MacIntyre (Cruise Leader 8/8/61 - 26/8/61)
E. Hagmeier, Institute for Marine Research, Kiel
C. Middleton
U. Rabsch, Institute for Marine Research, Kiel
B. Scott
J. Staniforth

The analyses of hydrological samples made in the ship's laboratory were carried out by Mr Staniforth, and the samples returned to Cronulla were analysed by Messrs Davies and Walker. The primary production and pigment samples were taken and filtered by Mr Scott, who also made the counts of ^{14}C samples. Pigment determinations were made at the Cronulla laboratory by Mr Wootton. Phytoplankton was collected by Mr Middleton and counts were made aboard by him. The zooplankton samples were weighed at Cronulla by Mr Tranter. Seston samples were collected and analysed by Dr Hagmeier and Mr Rabsch.

The data were processed under the direction of Mr Crooks by Mrs Derrick, Mrs Tarbett and Misses Johnston, Lalor and Wanstall. The plots were prepared for publication by Mr Breach and Mrs Cozens.

II. WORK ACCOMPLISHED

Bathythermograph casts were made at only two stations. The SCOR-UNESCO Reference Station No.1 could not be worked at the beginning of the cruise because of very rough weather. Surface hydrology samples were taken at 48 stations and, at all of these, deep casts were made. Primary production samples were taken at 30 stations and incubated in the light incubator. At three stations (Dm 3/159, 173, and 193/61) six hour drift stations were worked for primary production. Pigment samples were taken at 34 stations and filtered aboard. Phytoplankton samples were taken at 10 stations, and the counts were used in the enrichment experiments. Zooplankton samples were taken at 35 stations with replicate sampling at three stations (Dm 3/142, 146, 159/61). Enrichment experiments were carried out at 16 stations. Seston samples were taken at 47 stations. Transparency recordings were made at 31 stations. Table 1 shows the work done at each station.

TABLE 1
WORK DONE AT EACH STATION

Station Number	Hydrology		Primary Production		Pig- ments	Phyto- plankton		Seston		Trans- parency Rec.	Zoo- plankton		Enrichment Experiments
	1	2	1	2		1	2	1	2		1	2	
141	+	+				+		+					+
142	+	+				+		+				+	+
143	+	+					+						+
144	+	+											+
145	+	+											+
146												+	+
147											+		
148	+	+				+					+		
149	+	+	+										
150	+	+				+							
151	+	+	+			+					+		
152	+	+				+					+		
153	+	+				+							+
154	+	+				+							+
155	+	+											+
156	+	+				+			+				+
157	+	+	+								+		+
158	+	+				+							+

Station Number	BT Hydrology		Primary Production		Pig- ments	Phyto- plankton	Seston		Trans- parency	Zoo- plankton		Enrichment Experiments
	1	2	1	2			1	2		1	2	
181	+	+	+		+		+		+	+		
182										+		
183	+	+	+		+			+	+			+
184	+	+	+		+		+		+	+		
185	+	+	+		+			+	+			+
186	+	+	+		+		+		+	+		
187	+	+	+		+			+	+	+		
188	+	+	+		+		+		+	+		
189	+	+	+		+			+	+	+		
190	+	+	+		+		+		+	+		
191	+	+	+		+				+	+		
192	+	+	+		+		+			+		
193	+	+	+		+		+			+		

BT Hydrology	Bathymthermograms		Seston	1 Shallow cast (less than 400 m)	
	1	Surface		2	Deep cast
Primary Production	Sub-surface		Transparency Rec.	Transparency recordings	
	1	Light Bath incubation			
	2	6 hour "in situ" incubation	Zooplankton	1	Standard oblique hauls with Clarke-Bumpus sampler
				2	Replicate series

III. METHOD OF COLLECTION AND ANALYSIS OF SAMPLES

1. Physics

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

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

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

σ_t .- Sigma- t values were calculated by computer, using the Table of σ_t given by the U.S. Hydrographic Office (1955).

Dynamic Heights.- Dynamic heights were calculated from interpolated values of temperature and salinity using Tables 6, 7, and 9 given by La Fond (1951).

Transparency Meter.- The extinction coefficient was measured with a transparency meter of 2 m base length. The transparency was recorded continuously, and values were read for each 10 m of depth. Filters RG 1 for red light and BG 12 for blue light were used. Transparency (x) is recorded in m^{-1} according to the formula $I = I_0 10^{-2x}$ where I is the galvanometer reading at a given depth and I_0 the reading in air.

2. Chemistry

Salinity.- Salinity was measured on board with an inductive salinometer (Brown and Hamon 1961). (Duplicate samples from depths below 4000 m were returned to Cronulla for checks.)

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.— The saturation values were calculated by computer using the equations of Richards and Corwin (1956).

Inorganic Phosphate.— The method of Atkins (1923) was used with 1 ml molybdate reagent (300 ml 10% ammonium molybdate and 100 ml 50% sulphuric acid) and 0.1 ml 1% 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. Analyses were carried out in batches of 10 since air temperature never exceeded 25°; readings were taken within 10 minutes after the reagents were added and completed within a further 10 minutes. Each batch was compared with a distilled water blank and a 0.65 $\mu\text{g at./l}$ standard in a Hilger Spekker absorptiometer using 4 cm cells and Ilford 608 filters. Each week a complete check was made using standards up to 3.25 $\mu\text{g at./l}$. Results are given as $\mu\text{g at.P/l}$ without any correction for salt error and are precise to $\pm 10\%$ for values less than 0.5 $\mu\text{g at./l}$ and $\pm 5\%$ 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% perchloric acid was added, and digestion at 200°-250° 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, 100 ml of distilled water and 2 drops of 2% phenolphthalein

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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 for inorganic phosphate. Results are given as $\mu\text{g at./l}$, without salt correction. If it is wished to correct for salt effects, the results given should be multiplied by 1.15.

Nitrate.- Samples taken at sea were stored in plastic bottles and preserved with 2 drops of saturated HgCl_2 . Nitrate was determined at the Cronulla laboratory 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 sea water or standard nitrate solution. The standards were made up in a mixture of equal volumes of artificial sea water 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 m μ using a 5 mm cell. Samples with an extinction greater than that of the standard corresponding to 14.4 $\mu\text{g at./l}$ were diluted with artificial sea water-sulphuric acid mixture before reading. Results are given in $\mu\text{g at./l}$.

3. Primary Production

Water samples were aliquots of those taken in a 5 l plastic sampler for pigment measurements. Otherwise the techniques used were as in Jitts (1957) except that counting was done with a windowless Geiger counter on board and standardization of the ^{14}C solutions was made by the method of Jitts and Scott (1961). As indicated in the data, incubation was done in one of the three following ways, in 300 ml pyrex bottles:

- (a) In a fluorescent light incubator with a constant illumination of about 1100 ft candles.
- (b) In situ by suspending the samples from a free floating buoy.

- (c) In a simulated in situ incubator using sunlight and blue glass filters (Jitts, 1963).

During drift stations, diurnal variations of photosynthetic uptake of CO_2 were studied by making measurements on samples taken at approximately 3 hourly intervals throughout the time on station. For this, incubation was as in (a) above.

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 metal desiccators over silica gel. The analyses were carried out at Cronulla using the method given by Humphrey (1960).

5. Phytoplankton

Samples were collected in a 5 l plastic sampler (Davis 1957) at 0, 25, 50, 75, 100, and 150 m. The samples were transferred to polythene bottles and centrifuged immediately at 5,000 g in a continuous centrifuge (Davis 1957); each 5 l sample took 15 min. The residue in the cup was carefully washed into a graduated tube and diluted to 10 ml with sea water.

Quantitative Examination.- All counts were made with a Petroff Hausser bacterial counting chamber. If the count was more than five per field, four fields were counted; if the count was less than five per field, ten fields were counted.

Organisms with chlorophyll were counted by using a Wild BG 12 fluorescence filter, a Wild OG 1 exclusion filter, an immersed condenser, and a high-power incandescent lamp. The chloroplasts appeared bright red in the blue-violet light.

Organisms without chlorophyll were calculated as the difference between total living organisms and organisms with

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chlorophyll. Total living organisms were counted after adding acridine orange to give a final concentration of 2 parts per million. The living organisms gave a green fluorescence in the blue-violet light produced by the filter system described above.

Total particles were counted with ordinary illumination.

Qualitative Examination.- Twenty minute tows were made with a modified Hardy Indicator. The plankton was washed off the metal grid (120 meshes/in.) with sea water, and formalin was added to give a final concentration of 2%. Identifications were made at Cronulla (Tables 8 and 9,

6. Zooplankton

Zooplankton was usually collected by modified Clarke-Bumpus samplers. Samples were taken in duplicate, two units being towed one immediately above the other. The hauls were oblique, and of a standard form. In deep waters, the stratum sampled was 200 m - surface, the hauls lasting approximately $\frac{1}{2}$ hour; in waters shallower than 200 m the hauls were from bottom to surface and were proportionately shorter in duration. Depths were estimated from wire angles and are only approximate. Ship's speed during the tow varied from 2-3 knots. Continuous sampling was carried out during a 24-hour period at Station 159 for the purpose of estimating sampling variability.

Some estimates were made of the sampling performance of Juday net and high speed sampler relative to that of the Clarke-Bumpus sampler. The small ("boreal") Juday net (truncated from 50-37 cm mouth diameter) was towed vertically in conjunction with the Clarke-Bumpus on three occasions. The high speed sampler (Ahlstrom et al. 1958) was towed horizontally at the surface on five occasions, alternating with similar Clarke-Bumpus hauls.

7. Seston

Samples were collected with 5 l plastic samplers from standard sampling depths to 3000 m at morning stations and to 500 m at evening stations.

Particulate Matter (Seston).- This included plankton and was collected on paper filters (pore size about $1\ \mu$). A vacuum filtration set was used, similar to that mentioned by Humphrey (1960). The volume of sea water filtered, whether taken by plastic bucket or by a sampler, ranged from 1 to 10 l. Dry weight of particulate matter was obtained by weighing the filters ashore before and after filtration, keeping the humidity of the paper constant. The accuracy of the figures is estimated to be $\pm .02\ \text{mg/l}$.

Albumin Equivalent.- Values are an indicator of biologically active material, i.e. plankton. Particulate matter, collected on paper filters and weighed, as shown above, was hydrolysed by sodium hydroxide. After adding copper sulphate the biuret colour was examined, using an "Elko II" photometer. Details of the procedure are in Krey, Banse and Hagmeier (1957). For standardization, albumin has been analysed in the same way as particulate matter. The accuracy of the results is considered to be $\pm .005\ \text{mg/l}$.

Chemical analyses were carried out to determine calcium and ammonia in the sea water samples from which seston and albumin equivalent values were determined.

Calcium.- Complexometric titration was used to determine the calcium content of sea water, following Pate and Robinson (1958). Titriplex III (disodium-ethylenediaminetetraacetate) was the titrant, calcon-carboxylic acid was used as an indicator, and a solution of sodium hydroxide and potassium cyanide to complex interfering ions. A piston burette and a magnetic stirrer gave accurate and quick results in the ship's laboratory. From the analysis of 25 ml samples the accuracy obtained was $\pm 1\ \text{mg Ca/l}$.

Ammonia.- The method applied (Gillbricht 1961) depends upon the action of ammonia on sodium hypobromite in an alkaline medium. Excess hypobromite is estimated colorimetrically by adding Bordeaux B solution, which is decolorized by the hypobromite in an acid medium. The determination was done on board with a Hilger Spekker, using Ilford 604 filters; it has to be carried out shortly after sampling: when sea water is stored the ammonia content rises quickly because of the decomposition of organic material. The accuracy obtained by analysing 25 ml samples is considered to be $\pm .5 \mu\text{g at.N/l.}$

8. Enrichment Experiments

A series of enrichment experiments, involving 14 stations, was carried out (Tranter and Newell, 1963). The characteristics of the samples collected are given in Table 2 (p. Seven translucent polyethylene 500 ml bottles were filled to the top from the sea water samples, which had been collected in a plastic 5 l water sampler. Two of the bottles were untreated, five were enriched by adding:

1. 200 μg nitrogen, as KNO_3
2. 50 μg phosphorus, as KH_2PO_4
3. 50 μg iron, as $\text{FeSO}_4\text{-EDTA}$
4. 50 μg iron, as $\text{FeSO}_4\text{-EDTA}$ + 200 μg nitrogen as KNO_3
5. 50 μg iron, as $\text{FeSO}_4\text{-EDTA}$ + 50 μg phosphorus as KH_2PO_4 .

The first untreated sample (Initial) was immediately divided into a 275 ml portion for measurement of CO_2 uptake, and a 250 ml portion for phytoplankton counting. The other six samples were stoppered and incubated for 20 hours (at two stations the period was three days) in an illuminated bath (C.S.I.R.O. Aust. 1960) cooled by sea water from the ship's circulating system. The temperature of this water varied between 20° and 25° . After the "pre-incubation" period, the six samples were removed from the bath and divided into two parts for measurement of CO_2 uptake and cell counts, as for Initial sample.

On Traverse II no samples were collected from 50 m. Instead, a duplicate 5 l sample was collected from 25 m. This was dispensed into seven 500 ml polyethylene bottles which were treated as described above, except that after the pre-incubation period a 275 ml portion was used for measurement of CO₂ uptake in the dark.

Values obtained for CO₂ uptake in the light and in the dark, and phytoplankton counts (cells/l) are given in Tables 3, 4, and 5. At two stations (161 and 165) experiments were carried out to test the effect of varying the iron enrichment (Table 6).

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IV. DATA SHEETS

Data were listed on an I.B.M. 1401. Explanation of headings are given at the beginning of the relevant section.

DATA

PART 1

PHYSICS

TRANSPARENCY METER READINGS

TRANSPARENCYMeasured with Filter RG1

Station	151	152	153	154	155	156	157	158	159	160	161	162
Depth m												
0	.165	.145	.145	.150	.141	.129	.134	.217	.251	.164	.184	.193
10	.160	.145	.145	.155	.128	.129	.134	.214	.251	.167	.190	.195
20	.160	.149	.145	.155	.128	.129	.134	.211	.195	.173	.187	.226
30	.160	.160	.145	.155	.128	.129	.134	.203	.170	.173	.179	.256
40	.160	.206	.149	.145	.128	.127	.134	.193	.149	.193	.173	.206
50	.160			.155	.128	.126	.134	.183	.134	.224	.157	.165
60	.160			.155	.128	.125	.134	.172	.134	.192	.152	.159
70	.147			.145	.128	.122	.134	.167	.134	.132	.142	.150
80	.155			.140	.128	.121	.134	.162	.133	.127	.137	.148
90	.160			.140	.128	.117	.117	.157	.131	.123	.137	.146
100				.140	.128	.117	.113	.152	.129	.120	.135	.144
110				.140	.128	.112	.113	.148	.128	.118	.133	.139
120				.135	.124	.109	.109	.143	.127	.117	.133	.138
130				.118	.124	.107	.109	.118	.126	.116	.133	.137
140				.118	.124	.104	.109	.109	.125	.116	.133	.137
150				.120	.119	.103	.113	.109	.125	.116	.133	.137
160				.121	.111			.109	.125	.116	.133	
170				.135	.111			.109	.125		.133	
180				.146	.109			.109	.125		.133	
190				.146	.109			.109	.125		.133	
200				.146	.109			.106	.125			

TRANSPARENCY

Measured with Filter RG 1

Station Depth m	163	164	165	166	167	170	171	172	173	174	175	177
0	.160	.169	.190	.295	.237	.199	.146	.157	.159	.133	.163	.211
10	.160	.169	.172	.295	.237	.199	.140	.157	.159	.133	.163	.211
20	.160	.169	.159	.295	.251	.255	.139	.157	.159	.133	.163	.237
30	.160	.169	.159	.295	.251	.255	.137	.157	.158	.133	.169	.229
40	.170	.169	.159	.295	.251	.260	.136	.157	.157	.133	.169	.255
50	.148	.166	.159	.316	.251	.400	.135	.152	.156	.133	.169	.265
60	.143	.162	.149			.359	.130	.152	.152	.133	.166	.250
70	.133	.157	.144				.126	.152	.147	.133	.164	
80	.128	.169	.138					.152	.145	.127	.164	
90	.128	.149	.137					.152	.135	.122		
100	.128	.143	.133					.146	.125	.122		
110	.125	.140	.128					.135	.122	.120		
120	.123	.139	.128					.133	.120	.117		
130	.123	.137	.133					.130	.111	.117		
140	.123	.136	.130					.127	.106	.112		
150	.123	.135	.128					.127	.104	.112		
160		.135						.127	.102	.112		
170		.135										
180		.135										
190		.135										
200		.135										

TRANSPARENCY

Measured with Filter RG 1

[illegible]

TRANSPARENCY

Measured with Filter BG 12

Station	151	152	153	154	155	156	157	158	159	160	161	162
Depth												
m												
0	.094	.094	.079	.111	.105	.078			.406	.136	.239	.183
10	.094	.086	.079	.123					.322	.136	.229	.183
20	.094	.086	.079	.126					.239	.135	.220	.183
30	.094	.101	.079	.111					.151	.132	.212	.218
40	.094	.112	.083	.101					.114	.132	.192	.239
50	.093			.126					.076	.192	.172	.169
60	.091			.114					.059	.130	.133	.130
70	.090			.104					.059	.071	.119	.117
80	.072			.099					.059	.075	.106	.102
90	.079			.095					.059	.060	.090	.093
100				.092					.057	.055	.079	.089
110				.095					.058	.051	.073	.088
120				.085					.058	.050	.073	.088
130				.057					.061	.049	.073	.088
140				.052					.061	.049	.071	.088
150				.052					.061	.049	.068	
160				.057					.063		.066	
170				.080					.064		.066	
180				.090					.064		.069	
190				.090					.064		.071	
200				.090					.066		.071	

TRANSPARENCYMeasured with Filter BG 12

Station Depth m	163	164	165	166	167	170	171	172	173	174	175	177
0	.145	.250	.134	.283	.186	.162	.092	.106	.083	.072	.103	.151
10	.141	.213	.134	.283	.186	.185	.092	.106	.083	.072	.099	.151
20	.135	.192	.127	.283	.203	.221	.092	.106	.083	.072	.099	.169
30	.135	.177	.120	.283	.203	.221	.086	.106	.083	.072	.096	.177
40	.135	.159	.117	.283	.203	.239	.088	.106	.080	.070	.096	.187
50	.113	.145	.117	.283	.203	.416	.082	.102	.077	.069	.099	.187
60	.099	.145	.107	-	-	.395	.069	.102	.068	.069	.083	.187
70	.087	.119	.101	-	-	-	.075	.095	.057	.068	.088	-
80	.077	.156	.088	-	-	-	-	.099	.046	.066	.088	-
90	.071	.091	.076	-	-	-	-	.099	.046	.058	-	-
100	.071	.086	.070	-	-	-	-	.092	.043	.052	-	-
110	.068	.082	.065	-	-	-	-	.085	.028	.049	-	-
120	.065	.082	.063	-	-	-	-	.079	.028	.046	-	-
130	.065	.077	.065	-	-	-	-	.067	.028	.040	-	-
140	.062	.077	.071	-	-	-	-	.067	.026	.038	-	-
150	.062	.077	.065	-	-	-	-	.063	.024	.033	-	-
160		.077		-	-	-	-		.024	.033	-	-
170		.077		-	-	-	-				-	-
180		.078		-	-	-	-				-	-
190		.079		-	-	-	-				-	-
200		.079		-	-	-	-				-	-

TRANSPARENCY

Measured with Filter BG 12

Station Depth m	179	180	181	183	184	185	186	187	188	189	190
0	.058	.054	.087	.044	.099	.038	.057	.050	.049	.049	.091
10	.058	.054	.087	.044	.099	.038	.057	.050	.049	.049	.091
20	.090	.061	.087	.044	.099	.038	.059	.050	.049	.056	.097
30	.099	.067	.092	.044	.099	.038	.062	.050	.049	.049	.097
40	.108	.067	.092	.044	.079	.038	.079	.050	.053	.049	.094
50	.101	.075	.092	.044	.079	.038	.074	.050	.056	.049	.091
60	.099	.075	.092	.045	.075	.038	.063	.050	.060	.049	.091
70	.096	.057	.082	.045	.075	.038	.063	.054	.046	.040	.097
80	.087	.060	.081	.045	.072	.049	.058	.050	.046	.034	.083
90	.090	.061	.079	.045	.057	.041	.054	.035	.035	.028	.072
100		.061	.074	.045	.040	.037	.047	.033	.026	.025	.064
110		.067	.064	.057	.031	.030	.047	.025	.024	.022	.060
120		.059	.058	.049	.030	.028	.041	.023	.021	.022	.055
130		.047	.055	.045	.029	.023	.038	.020	.015	.020	.055
140		.047	.053	.037	.027	.018	.034	.020	.015	.017	.055
150		.047	.051	.036	.025	.018	.036	.020	.015	.015	.055
160											
170											
180											
190											
200											

DATA
PART 2
SESTON
AND
RELATED CHEMICAL ANALYSES

STATION DATE LATITUDE LONGITUDE DEPTH SESTON PROTEIN
 (ALBUMIN EQUIVALENT)

26.

141	20.7.61	31°55'S.	115°28'E.	1 5 10 25 35	mg/l 0.22 0.14 0.40 0.38 0.45	mg/l 0.030 0.005 0.055 0.035 0.010
142	20.7.61	31°57'S.	115°13'E.	0 10 25 50 75 100 150 195	0.49 0.31 0.27 0.30 0.29 0.60 0.39 0.45	0.025 0.010 0.025 0.010 0.010 0.035 0.020 0.035
143	21.7.61	32°15'S.	114°28'E.	0 10 25 50 75 100 150 200 300	0.23 0.33 0.27 0.27 0.20 0.22 0.13 0.24 0.24	0.010 0.030 0.015 0.000 0.010 0.005 0.000 0.005 0.010

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
143	21.7.61	32°15'S.	114°28'E.	550	.21	.005
				750	.22	.000
				1000	.30	.010
149	24.7.61	26°32'S.	112°33'E.	0	.06	.000
				10	.06	.010
				25	.07	.005
				50	.12	.015
				75	.04	.000
				100	.05	.000
				150	.07	.005
				315	.11	.000
150	24.7.61	24°23'S.	113°03'E.	0	.06	.000
				5	.06	.000
				10	.11	.010
				25	.11	.015
				50	.12	.005
151	25.7.61	21°56'S.	113°50'E.	0	.05	.005
				5	.11	.020
				10	.16	.030
				25	.15	.025
				50	.15	.015
				75	.15	.020
				100	.25	.015

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
152	25.7.61	20°17'S.	116°02'E.	0	.15	.020
				5	.19	.015
				10	.16	.025
				25	.14	.025
				40	.21	.020
153	26.7.61	19°46'S.	117°54'E.	0	.11	.025
				5	.11	.025
				10	.16	.030
				25	.18	.015
				50	.23	.045
154	26.7.61	18°45'S.	117°34'E.	0	.15	.020
				5	.20	.030
				10	.19	.040
				25	.15	.070
				50	.18	.035
				75	.13	.030
				100	.08	.020
				150	.14	.040
				200	.13	.040
155	27.7.61	18°04'S.	117°10'E.	0	.20	.015
				10	.16	.015
				25	.11	.010
				50	.13	.020

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
155	27.7.61	18°04'S.	117°10'E.	75 100 150 200 300 545 750 1000	.12 .12 .06 .10 .09 .04 .05 .10	.025 .015 .015 .020 .005 .020 .015 .015
156	27.7.61	16°24'S.	116°19'E.	0 5 10 25 50 75 100 150 200 300	.11 .12 .18 .15 .12 .09 .03 .09 .03 .06	.015 .015 .030 .015 .030 .025 .010 .030 .020 .020
157	28.7.61	13°27'S.	114°58'E.	0 10 25 50 75 100	.22 .17 .10 .12 .10 .09	.005 .025 .015 .030 .015 .005

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l	30.
157	28.7.61	13°27'S.	114°58'E.	150	.08	.015	
				300	(.08)	.020	
				500	.09	.020	
				1000	.02	.015	
				1500	.04	.010	
158	28.7.61	12°18'S.	114°33'E.	0	.13	.020	
				5	.13	.025	
				10	.10	.030	
				25	.14	.045	
				50	.15	.025	
				75	.06	.020	
				100	.14	.030	
				150	.10	.025	
				300	.17	.025	
159	29.7.61	09°29'S.	113°08'E.	0	.30	.035	
				10	.21	.030	
				25	.27	.050	
				50	.12	.025	
				75	.15	.010	
				100	.02	.010	
				150	.07	.015	
				300	.10	.010	
				500	.16	.025	
				1000	.15	.010	

() Estimated from albumin data

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
159	29.7.61	09°29'S.	113°08'E.	1500	.04	.020
				2000	.02	.005
				2900	.12	.020
159	30.7.61	09°29'S.	113°08'E.	0	.35	.050
				5	.27	.055
				10	.35	.035
				25	.18	.025
				50	.11	.020
				75	.11	.020
				100	.11	.010
				150	.09	.020
				300	.10	.010
160	31.7.61	09°58'S.	115°16'E.	0	.10	.040
				10	.28	.025
				25	.21	.025
				50	.36	.055
				75	.17	.040
				100	.24	.055
				150	.15	.030
				300	.13	.025
				500	.19	.050
				1000	.17	.025
				1500	.12	.025

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
161	31.7.61	10°23'S.	116°47'E.	0	.15	.020
				10	.14	.020
				25	.15	.020
				50	.10	.020
				75	.10	.025
				100	.09	.025
				150	.08	.020
				300	.09	.010
162	1.8.61	10°39'S.	118°47'E.	0	.31	.035
				10	.35	.030
				25	.40	.055
				30	.86	.115
				40	.59	.040
				50	.23	.000
				75	.02	.015
				100	.01	.000
				150	.02	.015
				300	.13	.025
				500	.29	
				1000	.33	.015
				1500	.34	.020

A blank indicates no data available

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
163	1.8.61	11°09'S.	120°36'E.	0	.20	.005
				10	.26	.020
				25	.25	.010
				50	.27	.005
				75	.27	.035
				100	.24	.035
				150	.28	.000
				300	.25	.010
164	2.8.61	11°40'S.	122°27'E.	0	.11	.005
				10	.26	.020
				25	.21	.010
				50	.14	.020
				75	.13	.005
				100	.11	.010
				150	.11	.010
				300	.10	.010
				500	.14	
				750	.17	
				1000	.17	.010
165	2.8.61	12°53'S.	123°14'E.	0	.19	.015
				10	.25	.020
				25	.27	.015
				50	.21	.015
				75	.15	.010

A blank indicates no data available

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN	
						(ALBUMIN EQUIVALENT)	³⁴
165	2.8.61	12°53'S.	123°14'E.	100	.15	mg/l	
				150	.14	.010	
				300	.13	.010	
166	3.8.61	14°43'S.	123°49'E.	0	.92	.015	
				10	1.11	.020	
				25	1.03	.015	
				50	1.74	.020	
167	3.8.61	13°05'S.	125°27'E.	0	.32	.015	
				10	.37	.015	
				25	.48	.045	
				50	.56	.035	
168	4.8.61	12°42'S.	127°23'E.	0	.31	.015	
				10	.25	.020	
				25	.32	.020	
				50	.43	.030	
169	4.8.61	12°27'S.	128°49'E.	0	.18	.020	
				10	.30	.020	
				25	.26	.025	
				50	.20	.020	
				75	.29	.020	

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
170	9.8.61	12°31'S.	127°14'E.	0	.24	.010
				10	.35	.030
				25	.57	.030
				50	.72	.020
				60	1.04	.035
171	9.8.61	12°35'S.	124°53'E.	0	.11	.005
				10	.17	.030
				25	.19	.030
				50	.25	.040
				75	.25	.030
172	13.8.61	12°33'S.	122°32'E.	0	.23	.015
				10	.23	.030
				25	.25	.035
				50	.28	.050
				75	.23	.030
				100	.18	.025
				150	.12	.025
				300	.09	.025

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	36 PROTEIN (ALBUMIN EQUIVALENT) mg/l	
173	14.8.61	13°45'S.	119°57'E.	0	.11		.010
				10	.25		.035
				25	.20		.035
				50	.12		.025
				75	.08		.030
				100	.11		.020
				150	.09		.025
				300	.09		.030
				500	.13		.030
				750	.07		.020
				1000	.12		.010
				1500	.14		.015
174	15.8.61	15°20'S.	120°45'E.	0	.14		.020
				10	.15		.020
				35	.17		.050
				50	.12		.050
				75	.13		.025
				100	.17		.030
				150	.10		.025
				300	.09		.020
				500	.16		.010

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
175	15.8.61	16°44'S.	121°04'E.	0	.18	.020
				5	.21	.030
				10	.07	.020
				25	.07	.025
				50	.24	.030
				75	.22	.015
176	16.8.61	17°54'S.	121°57'E.	0	1.04	.010
				5	1.51	.025
				10	1.37	.025
				15	1.18	.025
				20	1.81	.030
177	18.8.61	18°16'S.	121°44'E.	0	.23	.020
				10	.33	.020
				25	.49	.030
				50	1.51	.060
178	19.8.61	18°59'S.	118°18'E.	0	.13	.010
				10	.19	.030
				25	.23	.035
				50	.20	.045
				75	.40	.060
				100	.61	.035

38.

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
179	19.8.61	19°48'S.	115°52'E.	0	.13	.015
				10	.09	.030
				25	.24	.045
				50	.26	.050
				75	.20	.050
				100	.56	.045
180	20.8.61	17°44'S.	114°29'E.	0	.09	.005
				10	.15	.035
				25	.09	.030
				50	.16	.030
				75	.15	.030
				100	.11	.020
				150	.09	.015
				300	.10	.010
				500	.13	.005
				750	.10	.010
				1000	.09	.005
				1500	.08	.005
181	20.8.61	16°25'S.	113°57'E.	0	.07	.030
				10	.09	.035
				25	.11	.030
				50	.09	.035
				75	.12	.030

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
181	20.8.61	16°25'S.	113°57'E.	100	.08	.020
				150	(.09)	.030
				300	.11	.030
183	21.8.61	15°05'S.	111°26'E.	0	.04	.015
				10	.14	.020
				25	.10	.030
				50	.17	.020
				75	.09	.045
				100	.09	.025
				150	.09	.030
				300	.09	.025
				500	.06	.010
				750	.05	.015
				1000	.07	.010
				1500	.09	.005
184	21.8.61	15°03'S.	110°00'E.	0	.26	.025
				10	.18	.015
				25	.24	.045
				50	.32	.075
				75	.23	.055
				100	.22	.030
				150	.14	.045
				300	.13	.035

() Estimated from albumin data

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
185	22.8.61	17°16'S.	110°00'E.	0	.13	.015
				10	.12	.015
				25	.14	.015
				50	.17	.025
				75	.32	.070
				100	.20	.035
				150	.14	.030
				300	.16	.030
				500	.08	.005
				750	.02	.010
				1000	.03	-
				1500	.02	.010
186	22.8.61	19°22'S.	189°54'E.	0	(.05)	.020
				10	.06	.020
				25	.14	.025
				50	.03	.035
				75	.08	.040
				100	.15	.035
				150	.08	.025
				300	.15	.010

() Estimated from albumin data

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
187	23.8.61	21°37'S.	110°00'E.	0 10 25 50 75 100 150 300 500 700 1200 1500 2000 3000	(.09) (.11) (.12) (.07) (.07) (.12) (.08) (.09) (.08) (.11) (.01) (.05) (.02) (.02)	.010 .025 .025 .015 .025 .020 .015 .010 .025 .005 .005 .010 .015 .000
188	23.8.61	23°11'S.	109°59'E.	0 10 25 50 75 100 150 300	.13 .06 (.07) .10 .19 .19 .17 .21	.010 .040 .020 .020 .030 .020 .020 .005

() Estimated from albumin data

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
189	24.8.61	25°29'S.	110°02'E.	0	.14	.015
				10	.20	.020
				25	.16	.010
				50	.17	.045
				75	.22	.025
				100	.11	.020
				150	.11	.010
				300	.18	.020
				500	.14	.005
				750	.16	.020
				1000	.10	.015
				1500	.11	.015
190	24.8.61	27°27'S.	110°00'E.	0	.20	.025
				10	.17	.045
				25	.23	.050
				50	.28	.045
				75	.18	.035
				100	.17	.025
				150	.21	.045
				300	.21	.030

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l
191	25.8.61	29°22'S.	110°04'E.	0	.24	.020
				10	.07	.025
				25	.10	.030
				50	.15	.035
				75	.09	.030
				100	.10	.020
				150	.05	.020
				300	.06	.025
				500	(.06)	.025
				750	.05	.020
				1000	.15	.030
				1500	.06	.015
192	25.8.61	31°00'S.	110°05'E.	0	.14	.015
				10	.17	.025
				25	.20	.050
				50	.16	.025
				75	.16	.040
				100	.17	.045
				150	.17	.045
				300	.39	.030

() Estimated from albumin data

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	SESTON mg/l	PROTEIN (ALBUMIN EQUIVALENT) mg/l	44.
193	26.8.61	32°02'S.	111°45'E.	0	.16	.030	
				10	.15	.020	
				25	.10	.035	
				50	.12	.035	
				75	.13	.035	
				100	.18	.020	
				150	.09	.025	
				300	.12	.030	
				500	.08	.005	
				750	.07	.000	
				1000	.03	.005	
				1500	.08	.005	
				2000	{.01}	.005	
				3000	{.03}	.000	
				4000	{.02}	.000	
				5000	{.00}	.000	
193	26.8.61	32°02'S.	111°45'E.	0	.11	.005	
				10	(.01)	.010	
				25	.15	.035	
				50	.13	.030	
				75	.04	.020	
				100	.12	.015	
				150	.11	.000	
				300	.02	.015	

() Estimated from albumin data

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA μg at.N/l
141	20.7.61	31°55'S.	115°28'E.	0	418	
				10	412	
				20	402	
				30	412	
				40	422	
142	20.7.61	31°57'S.	115°13'E.	0	413	5.9
				25	425	2.8
				50	435	2.8
				75	432	2.6
				100	428	3.2
				150	441	4.1
				175	416	3.7
143	21.7.61	32°15'S.	114°28'E.	0	428	
				25	438	
				50	435	
				75	431	
				100	423	
				150	438	
				200	430	
				300	426	
				500	428	
				700	419	
				900	414	
				1100	416	
				1300	435	
				1500	428	

A blank for ammonia indicates no reliable values available

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA $\mu\text{g at.N/l}$
149	24.7.61	26°32'S.	112°33'E.	0	430	2.9
				10	432	5.2
				25	433	4.1
				50	433	5.5
				75	435	4.4
				100	437	3.4
				150	444	3.7
				300	438	2.9
150	24.7.61	24°23'S.	113°03'E.	0	384	
				5	440	
				10	380	
				25	430	
				50	428	
151	25.7.61	21°56'S.	113°50'E.	0	416	4.2
				5	437	3.3
				10	423	3.8
				25	433	3.7
				50	435	3.1
				75	426	3.3
				100	430	4.5
152	25.7.61	20°17'S.	116°02'E.	0	433	7.4
				5	428	2.8
				10	433	1.9
				25	435	2.1
				40	437	1.8

A blank for ammonia indicates no reliable values available

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA μg. at.N/l
153	26.7.61	19°46'S.	117°54'E.	0	438	5.9
				5	437	3.9
				10	430	1.8
				25	432	2.6
				50	437	1.7
154	26.7.61	18°45'S.	117°34'E.	0	471	
				5	452	
				10	438	
				25	433	
				50	433	
				75	440	
				100	449	
				150	437	
				200	437	
155	27.7.61	18°04'S.	117°10'E.	0	478	5.2
				10	452	1.7
				25	432	1.1
				50	426	7.7
				75	428	1.8
				100	426	1.1
				150	432	0.0
				200	433	0.0
				300	435	0.7
				500	447	0.0
				750	435	3.7
				1000	423	3.3

A blank for ammonia indicates no reliable values available

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA μg at.N/l
156	27.7.61	16°24'S.	116°19'E.	0	432	
				5	437	
				10	420	
				25	418	
				50	426	
				75	430	
				100	420	
				150	428	
				200	423	
				300	426	
157	28.7.61	13°27'S.	114°58'E.	0	437	6.2
				10	425	7.4
				25	416	7.5
				50	425	2.5
				75	433	2.5
				100	435	5.1
				150	447	4.1
				300	426	6.3
				500	426	5.5
				1000	440	3.3
				1500	435	6.6

A blank for ammonia indicates no reliable values available

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA μg at.N/l
158	28.7.61	12°13'S.	114°33'E.	0	416	3.9
				5	420	3.5
				10	420	3.4
				25	420	5.5
				50	437	2.9
				75	420	3.1
				100	425	2.7
				150	430	2.7
				300	425	1.5
159	29.7.61	09°29'S.	113°08'E.	0	423	3.2
				10	435	4.2
				25	425	3.7
				50	418	3.7
				75	423	1.2
				100	432	1.6
				150	438	3.8
				300	426	1.4
				500	426	4.0
				1000	447	5.0
				1500	444	4.9
				2000	449	1.6
				2900	445	1.2

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA $\mu\text{g at.N/l}$
159	30.7.61	09°29'S.	113°08'E.	0	430	4.7
				5	435	(14.7)
				10	426	2.6
				25	418	1.2
				50	432	2.4
				75	435	2.8
				100	437	1.6
				150	440	1.3
				300		
160	31.7.61	09°58'S.	115°16'E.	0	428	4.2
				10	437	6.7
				25	433	8.7
				50	430	5.7
				75	426	3.9
				100	430	4.1
				150	450	3.8
				300	447	4.0
				500	426	3.9
				1000	425	4.5
				1500	428	2.6
161	31.7.61	10°23'S.	116°47'E.	0	433	5.2
				10	426	5.7
				25	428	9.4
				50	425	5.2

() A blank for calcium and ammonia indicates no reliable values available
Doubtful

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA μg at.N/l
161	31.7.61	10°23'S.	116°47'E.	75	432	4.5
				100	428	4.7
				150	426	3.2
				300	437	3.4
164	2.8.61	11°40'S.	122°27'E.	0	430	3.3
				10	416	3.1
				25	432	4.6
				50	418	3.2
				75	426	2.2
				100	433	2.2
				150	425	2.1
				300	426	2.2
				500	425	3.9
				750	428	6.7
				1000	430	7.6
165	2.8.61	12°53'S.	123°14'E.	0	449	
				10	437	
				25	425	
				50	423	
				75	426	
				100	435	
				150	425	
				300	423	

A blank for ammonia indicates no reliable values available

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA $\mu\text{g at.N/l}$
166	3.8.61	14°43'S.	123°49'E.	0 10 25 50	433 423 437 438	5.5 1.4 4.8 1.1
167	3.8.61	13°05'S.	125°27'E.	0 10 25 50	437 438 440 462	2.6 2.9 3.7 2.5
168	4.8.61	12°42'S.	127°23'E.	0 10 25 50	(478) 440 445 461	2.2 3.9 2.4 0.6
169	4.8.61	12°27'S.	128°49'E.	0 10 25 50 75	449 437 433 428 454	0.4 0.4 2.8 2.8 1.5
170	9.8.61	12°31'S.	127°14'E.	0 10 25 50 60	433 444 437 430 432	2.7 2.8 4.5 2.6 1.9

() Doubtful

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA µg at.N/l
171	9.8.61	12°35'S.	124°53'E.	0	430	2.9
				10	437	8.0
				25	426	6.7
				50	426	4.1
				75	423	5.4
172	13.8.61	12°33'S.	122°32'E.	0	432	
				10	425	
				25	421	
				50	430	
				75	425	
				100	432	
				150	432	
				300	430	
173	14.8.61	13°45'S.	119°57'E.	0	423	2.3
				10	432	3.4
				25	416	2.3
				50	420	3.4
				75	423	3.5
				100	428	4.4
				150	432	3.9
				300	432	2.0
				500	430	6.5
				750	437	3.6
				1000	426	0.9
				1500	426	1.1

A blank for ammonia indicates no reliable values available

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA $\mu\text{g at.N/l}$
174	15.8.61	15°20'S.	120°45'E.	0	432	1.8
				10	430	2.2
				25	423	2.0
				50	430	3.0
				75	432	2.3
				100	432	2.0
				150	433	1.4
				300	430	1.4
				500	426	2.1
175	15.8.61	16°44'S.	121°04'E.	0	437	2.9
				5	423	3.6
				10	428	2.1
				25	430	1.7
				50	428	1.8
				75	428	1.7
176	16.8.61	17°54'S.	121°57'E.	0	450	1.5
				5	447	2.4
				10	442	3.0
				15	447	1.7
				20	444	2.9
177	18.8.61	18°16'S.	121°44'E.	0	445	1.1
				10	430	1.8
				25	438	2.0
				50	437	1.4

STATION	DATE	.LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA μg at.N/l
178	19.8.61	18°59'S.	118°18'E.	0	445	2.1
				10	437	3.2
				25	430	3.1
				50	438	3.1
				75	437	2.2
				100	437	4.3
179	19.8.61	19°48'S.	115°52'E.	0	437	1.8
				10	444	2.5
				25	447	2.7
				50	433	2.7
				75	425	1.8
				100	430	2.0
180	20.8.61	17°44'S.	114°29'E.	0	433	3.1
				10	430	3.6
				25	430	3.2
				50	444	4.5
				75	433	3.4
				100	432	3.4
				150	440	3.5
				300	442	3.4
				500	438	4.1
				750	435	3.4
				1000	418	2.8
				1500	432	5.5

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA μ g at.N/l
181	20.8.61	16°25'S.	113°57'E.	0	426	2.7
				10	430	2.4
				25	437	2.5
				50	428	1.9
				75	435	2.8
				100	433	2.0
				150	440	1.4
				300	442	1.5
183	21.8.61	15°05'S.	113°24'E.	0	428	2.3
				10	425	2.7
				25	420	3.0
				50	426	2.3
				75	426	2.4
				100	428	2.3
				150	433	1.7
				300	432	1.2
				500	428	1.6
				750	430	1.5
				1000	430	0.7
				1500	423	2.1

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA $\mu\text{g at. N/l}$
184	21.8.61	15°03'S.	110°00'E.	0	426	1.8
				10	440	2.4
				25	438	3.0
				50	435	2.7
				75	440	2.6
				100	426	2.3
				150	440	1.7
				300	438	1.7
				0	426	2.2
				10	418	2.2
	22.8.61	17°16'S.	110°00'E.	25	423	1.3
				50	421	3.1
				75	437	4.9
				100	428	6.5
				150	433	2.8
				300	433	0.7
				500	426	0.7
				750	426	1.4
				1000	432	0.5
				1500	430	3.4
187	23.8.61	21°37'S.	110°00'E.	0	440	1.9
				10	435	2.4
				25	442	3.1
				50	433	2.6
				75	433	2.9

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA μg at.N/l
187	23.8.61	21°37'S.	110°00'E.	100	433	2.1
				150	444	1.4
				300	438	2.2
				400	433	2.5
				500	426	2.1
				600	423	1.8
				700	426	1.1
				800	426	1.5
				1000	428	1.3
				1200	425	1.7
				1300	420	3.5
				1500	423	2.3
				1750	423	0.7
				2000	426	3.5
				3000	425	2.7
188	23.8.61	23°11'S.	109°59'E.	0	435	1.5
				10	426	2.3
				25	438	2.3
				50	444	2.5
				75	438	2.1
				100	438	1.7
				150	438	0.7
				300	442	0.7

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA μg at.N/l
189	24.8.61	25°29'S.	110°02'E.	0	438	3.5
				10	435	2.9
				25	430	2.8
				50	440	2.7
				75	437	2.4
				100	435	2.1
				150	447	2.0
				300	440	1.8
				500	430	1.5
				750	423	1.3
				1000	423	1.5
				1500	423	2.1
190	24.8.61	27°27'S.	110°00'E.	0	437	2.1
				10	432	3.1
				25	438	3.2
				50	435	2.7
				75	435	2.4
				100	437	2.4
				150	445	2.2
				300	445	2.8
				0	447	0.7
				10	437	1.3
				25	442	1.8
				50	438	1.8
191	25.8.61	29°22'S.	110°04'E.			

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA $\mu\text{g at.N/l}$
191	25.8.61	29°22'S.	110°04'E.	75	444	1.3
				100	440	1.2
				150	447	0.9
				300	435	0.7
				500	430	1.0
				750	423	0.5
				1000	440	0.1
				1500	428	1.1
192	25.8.61	31°00'S.	110°05'E.	0	447	1.3
				10	442	3.1
				25	437	1.8
				50	438	1.8
				75	442	1.9
				100	440	2.8
				150	461	1.8
				300	435	1.6
193	26.8.61	32°02'S.	111°45'E.	0	447	1.4
				10	442	2.9
				25	442	1.9
				50	442	1.8
				75	444	1.9
				100	438	2.1
				150	447	1.6

STATION	DATE	LATITUDE	LONGITUDE	DEPTH m (uncorrected)	CALCIUM mg/l	AMMONIA μg at.N/l
193	26.8.61	32°02'S.	111°45'E.	200	444	2.5
				300	452	1.4
				400	440	1.6
				500	438	1.1
				750	433	1.2
				900		2.4
				1000	426	1.0
				1100	425	2.5
				1300	422	4.6
				1500	435	1.1
				2000	430	1.1
				2500	440	1.4
				3000	435	1.2
193	26.8.61	32°02'S.	111°45'E.	3500	432	1.5
				4000	428	0.4
				4500	430	0.4
				5000	432	0.4
				0	449	3.1
				10	440	4.0
				25	438	3.6
				50	440	3.1
				75	444	1.9
				100	437	3.0
				150	447	3.4
				300	449	2.0

A blank for calcium indicates no reliable values available

DATA

PART 3

ZOOPLANKTON

BIOMASS

OCEANIC STATIONS: 200-0 m

OBLIQUE HAULS: CLARKE-BUMPUS

64.

STATION	DATE	TIME	LATITUDE	LONGITUDE	VOLUME FILTERED m ³	BIOMASS mg/m ³
143	21.7.61	0935	32°15'S.	114°28'E.	38.6	12
		0935	32°15'S.	114°28'E.	34.2	10
144		1330	32°10'S.	113°29'E.	34.1	21
		1330	32°10'S.	113°29'E.	31.2	14
145	22.7.61	0512	32°07'S.	112°37'E.	29.2	23
		0512	32°07'S.	112°37'E.	27.2	27
147		1050	31°59'S.	111°59'E.	48.7	7
		1050	31°59'S.	111°59'E.	39.4	7
		1140	31°59'S.	111°59'E.	53.2	17
		1140	31°59'S.	111°59'E.	54.2	16
		1240	31°59'S.	111°59'E.	44.5	12
		1240	31°59'S.	111°59'E.	38.6	13
		1350	31°59'S.	111°59'E.	43.7	15
		1350	31°59'S.	111°59'E.	39.0	10
		1500	31°59'S.	111°59'E.	37.0	9
149	24.7.61	0920	26°32'S.	112°33'E.	17.1	28
155	27.7.61	0620	18°04'S.	117°10'E.	32.0	88
156		1710	16°24'S.	116°19'E.	35.9	46
		1710	16°24'S.	116°19'E.	35.4	47
157	28.7.61	1010	13°27'S.	114°58'E.	26.3	74
		1010	13°27'S.	114°58'E.	29.4	65

OCEANIC STATIONS: 200-0 m

OBLIQUE HAULS: CLARKE-BUMPIUS

STATION	DATE	TIME	LATITUDE	LONGITUDE	VOLUME FILTERED m ³	BIOMASS mg/m ³
158	28.7.61	1720	12°18'S.	114°33'E.	28.7	168
159	29.7.61	1720	12°18'S.	114°33'E.	28.8	125
		1115	09°29'S.	113°08'E.	11.2	113
		1115	09°29'S.	113°08'E.	10.7	93
160	31.7.61	1105	09°58'S.	115°16'E.	20.0	88
		1105	09°58'S.	115°16'E.	18.7	118
161		2150	10°23'S.	116°47'E.	33.5	68
		2150	10°23'S.	116°47'E.	33.0	74
162	1.8.61	1045	10°39'S.	118°47'E.	17.2	152
		1045	10°39'S.	118°47'E.	17.5	159
163		2122	11°09'S.	120°36'E.	41.4	139
		2122	11°09'S.	120°36'E.	44.5	127
164	2.8.61	0955	11°40'S.	122°27'E.	41.1	48
		0955	11°40'S.	122°27'E.	42.6	43
165		2105	12°53'S.	123°14'E.	30.2	75
		2105	12°53'S.	123°14'E.	28.2	64
172	13.8.61	2109	12°33'S.	122°32'E.	15.6	104
		2109	12°33'S.	122°32'E.	17.0	150

OCEANIC STATIONS: 200-0 m

OBLIQUE HAULS: CLARKE-BUMPUS 6.

STATION	DATE	TIME	LATITUDE	LONGITUDE	VOLUME FILTERED m ³	BIOMASS mg/m ³
173	14.8.61	1200	13°45'S.	119°57'E.	23.7	63
		1200	13°45'S.	119°57'E.	23.5	58
174	15.8.61	0923	15°20'S.	120°45'E.	36.4	91
		0923	15°20'S.	120°45'E.	36.8	57
180	20.8.61	1020	17°44'S.	114°29'E.	27.3	133
		1020	17°44'S.	114°29'E.	24.6	126
181		1800	16°25'S.	113°57'E.	32.2	70
182	21.8.61	0130	15°02'S.	113°24'E.	47.8	71
		0130	15°02'S.	113°24'E.	53.6	64
183		1235	15°05'S.	111°26'E.	40.0	19
		1235	15°05'S.	111°26'E.	38.1	30
184		2110	15°03'S.	110°00'E.	29.3	98
		2110	15°03'S.	110°00'E.	29.5	82
185	22.8.61	1015	17°16'S.	110°00'E.	34.9	16
		1015	17°16'S.	110°00'E.	35.0	24
186		2100	19°22'S.	189°54'E.	18.0	33
		2100	19°22'S.	189°54'E.	16.1	40

OBLIQUE HAULS: CLARKE-BUMPUS

OCEANIC STATIONS: 200-0 m

STATION	DATE	TIME	LATITUDE	LONGITUDE	VOLUME FILTERED m ³	BIOMASS mg/m ³
187	23.8.61	1143	21°37'S.	110°00'E.	35.9	53
		1143	21°37'S.	110°00'E.	34.6	36
188		2057	23°11'S.	109°59'E.	18.7	85
189	24.8.61	0945	25°29'S.	110°02'E.	31.1	28
		0945	25°29'S.	110°02'E.	29.4	40
190		2104	27°27'S.	110°00'E.	24.2	31
		2104	27°27'S.	110°00'E.	22.8	34
191	25.8.61	0938	29°22'S.	110°04'E.	20.4	56
		0938	29°22'S.	110°04'E.	19.3	22
192		2102	31°00'S.	110°05'E.	36.3	39
		2102	31°00'S.	110°05'E.	34.9	31
193	26.8.61	1635	32°02'S.	111°45'E.	26.2	9

COASTAL STATIONS: BOTTOM-SURFACE

OBLIQUE HAULS: CLARKE-BUMPUS

68.

STATION	DATE	TIME	LATITUDE	LONGITUDE	VOLUME FILTERED m ³	BIOMASS mg/m ³	STRATUM m
141	20.7.61	1125	31°55'S.	115°28'E.	7.3	55	44-0
		1125	31°55'S.	115°28'E.	5.2	67	44-0
142		1810	31°57'S.	115°13'E.	36.2	15	200-0
		1810	31°57'S.	115°13'E.	34.2	19	200-0
150	24.7.61	2029	24°23'S.	113°03'E.	8.1	128	50-0
		2029	24°23'S.	113°03'E.	7.3	97	50-0
151	25.7.61	0915	21°56'S.	113°50'E.	54.5	41*	100-0
		0915	21°56'S.	113°50'E.	54.0	61*	100-0
152		2259	20°17'S.	116°02'E.	5.2	92	50-0
		2259	20°17'S.	116°02'E.	5.9	180	50-0
153	26.7.61	0902	19°46'S.	117°54'E.	3.0	150	50-0
		0902	19°46'S.	117°54'E.	3.6	180	50-0
154		1710	18°45'S.	117°34'E.	9.8	166	200-0
		1710	18°45'S.	117°34'E.	10.9	138	200-0
166	3.8.61	0855	14°43'S.	123°49'E.	10.9	287 ^P	50-0
		0855	14°43'S.	123°49'E.	12.5	386 ^P	50-0
167		2055	13°05'S.	125°27'E.	8.7	230	50-0
		2055	13°05'S.	125°27'E.	8.1	252	50-0
168	4.8.61	0915	12°42'S.	127°23'E.	13.0	105	50-0
		0915	12°42'S.	127°23'E.	12.0	107	50-0

* Predominantly gelatinous organisms

P Phytoplankton

COASTAL STATIONS: BOTTOM-SURFACE

STATION	DATE	TIME	LATITUDE	LONGITUDE	VOLUME FILTERED m ³	BIOMASS mg/m ³	STRATUM m
169	4.8.61	1700	12°27'S.	128°49'E.	9.3	96	70-0
		1700	12°27'S.	128°49'E.	7.5	206	70-0
170	9.8.61	0909	12°31'S.	127°14'E.	6.2	48(179*)	68-0
		0909	12°31'S.	127°14'E.	5.8	64(211*)	68-0
171		2052	12°35'S.	124°53'E.	7.7	126	91-0
		2052	12°35'S.	124°53'E.	7.2	232	91-0
175	15.8.61	2040	16°44'S.	121°04'E.	9.3	127	100-0
		2040	16°44'S.	121°04'E.	7.1	128	100-0
176	16.8.61	0945	17°54'S.	121°57'E.	12.6	87	16-0
		0945	17°54'S.	121°57'E.	11.7	79	16-0
177	18.8.61	2031	18°16'S.	121°44'E.	7.7	278	65-0
		2031	18°16'S.	121°44'E.	8.5	288	65-0
178	19.8.61	0840	18°59'S.	118°18'E.	7.4	93	100-0
		0840	18°59'S.	118°18'E.	7.7	99	100-0
179		2000	19°48'S.	115°52'E.	9.6	179	100-0
		2000	19°48'S.	115°52'E.	10.0	205	100-0

() Including exceptionally large organisms

* Predominantly gelatinous organisms

C O M P A R I S O N O F S A M P L E R S
CLARKE-BUMPUS (C.B.) AND HIGH SPEED (H.S.): SURFACE

STATION	DATE	TIME	LATITUDE	LONGITUDE	VOLUME FILTERED m ³	BIOMASS	SAMPLER
142	20.7.61	1910	31°57'S.	115°13'E.	10.8	31	H.S.
		2030	31°57'S.	115°13'E.	22.4	29	C.B.
		2030	31°57'S.	115°13'E.	24.7	26	C.B.
		2120	31°57'S.	115°13'E.	10.8	18	H.S.
		2235	31°57'S.	115°13'E.	33 approx.	28 approx.	C.B.
		2235	31°57'S.	115°13'E.	36.0	30	C.B.
		2320	31°57'S.	115°13'E.	10.8	31	H.S.
		0040	31°57'S.	115°13'E.	35.6	32	C.B.
		0040	31°57'S.	115°13'E.	34.2	38	C.B.
		0125	31°57'S.	115°13'E.	10.8	20	H.S.
		0245	31°57'S.	115°13'E.	30.7	22	C.B.
		0245	31°57'S.	115°13'E.	22.7	36	C.B.
	21.7.61	0330	31°57'S.	115°13'E.	10.8	16	H.S.
CLARKE-BUMPUS, OBLIQUE (C.B.) AND JUDAY, VERTICAL (J): 200-0 m							
154	26.7.61	1648	18°45'S.	117°34'E.	36.8	169	J
		1710	18°45'S.	117°34'E.	9.8	166	C.B.
		1710	18°45'S.	117°34'E.	10.9	138	C.B.
155	27.7.61	0620	18°04'S.	117°10'E.	32.0	88	C.B.
		0620	18°04'S.	117°10'E.	71.5	83	J
156		1645	16°24'S.	116°19'E.	50.4	67	J
		1710	16°24'S.	116°19'E.	35.9	46	C.B.
		1710	16°24'S.	116°19'E.	35.4	47	C.B.

REPLICATE SAMPLES

STATION 159: 200-0 m

OBLIQUE HAULS: CLARKE-BUMPUS

TIME	VOLUME FILTERED m ³	BIOMASS mg/m ³	TIME	VOLUME FILTERED m ³	BIOMASS mg/m ³
1220	13.0	179	0015	23.9	51
	13.2	157		31.4	56
1320	15.9	222	0120	18.3	74
	15.1	207		22.8	69
1420	15.0	129	0223	25.2	89
	16.7	122		32.2	54
1522	14.3	107	0330	18.5	90
	15.5	82		21.7	71
1615	18.7	91	0430	18.1	89
	18.7	97		19.8	66
1720	12.5	96	0540	18.3	111
	13.6	76		20.1	93
1815	12.6	106	0645	24.1	73
	13.6	130		27.7	50
1915	12.6	113	0740	23.7	76
	12.9	128		26.5	47
2015	41.3	69	0840	37.2	54
	37.1	75		41.5	32
2125	14.9	117	0935	34.5	46
	16.9	98		39.9	34
2230	14.5	162			
	16.2	101			
2325	12.4	114			
	13.7	86			

DATA

PART 4

ENRICHMENT EXPERIMENTS

TABLES 2-6

TABLE 2
CHARACTERISTICS OF EXPERIMENTAL SAMPLES

Traverse	Station Dm 3/61	Depth (m)	NO ₃ -N (µg/l)	PO ₄ -P (µg/l)	Total Iron (µg/l)
I	141	25	18.5	-	19.0
	142	25	13.5	5.0	19.0
	143	25	14.0	5.0	27.0
	144	25	19.0	5.0	52.0
	145	25	18.0	4.6	49.5
	147	25	8.0	5.5	49.5
I	141	40	11.0	7.1	35.0
	142	50	21.0	5.5	20.5
	143	50	8.0	4.2	24.5
	144	50	20.0	4.2	27.0
	145	50	10.0	6.2	33.5
	147	50	11.0	7.4	31.0
II	153	25	10.0	6.0	37.5
	154	25	13.0	7.4	39.0
	155	25	11.0	5.5	21.5
	156	25	14.0	6.9	18.0
	158	25	15.0	8.8	30.0
	159a	25	93.0	25.5	81.5
	159b	25	92.0	25.5	23.0
	159c	25	92.0	25.5	23.0
	183	25	22.4	3.1	-
	183*	25	-	-	-
	185	25	9.8	2.8	-
	185*	25	-	-	-

* Pre-incubation period 3 days

- Indicates that no analysis was carried out

TABLE 3
CO₂ UPTAKE OF EXPERIMENTAL SAMPLES

Traverse	Station	Depth	CO ₂ Uptake (mgC/m ³ /hr)						
			Unenriched		Enriched				
			Initial	Control	NO ₃	PO ₄	Iron	Iron + NO ₃	Iron + PO ₄
I	141	25	0.71	0.18	0.06 x	0.04 x	0.49 *	0.39	0.36
	142	25	0.57	0.24	0.12 x	0.10 x	0.38 *	0.25	0.21
	143	25	0.52	0.05	0.04	0.03	0.14	0.13	0.13
	144	25	0.52	0.17	0.19	0.15	0.32 *	0.27	0.23
	145	25	0.85	0.22	0.21	0.19	0.41 *	0.34	0.38
	147	25	0.41	0.19	0.22	0.18	0.25	0.29	0.28
I	141	40	0.68	0.13	0.08 x	0.11	0.32 *	0.26	0.30
	142	50	0.74	0.25	0.21	0.21	0.44 *	0.36	0.35
	143	50	0.37	0.05	0.02 x	0.02	0.07	0.04	0.08
	144	50	0.69	0.21	0.13 x	0.29	0.32 *	0.33	0.38
	145	50	0.90	0.23	0.19	0.16	0.53 *	0.40	0.53
	147	50	0.49	0.15	0.15	0.13	0.17	0.20	0.18
II	153	25	0.62	0.21	0.19	0.26	0.78 *	1.20	1.72
	154	25	0.70	0.21	0.06 x	0.17	0.57 *	0.78	1.33
	155	25	0.38	0.16	0.16	0.19	0.23 *	0.44	0.14
	156	25	0.32	0.12	0.08 x	0.11	0.25 *	0.46	0.26
	158	25	0.51	0.22	0.27	0.24	0.20	0.26	0.25

x Denotes decrease in CO₂ uptake relative to control

* Denotes increase in CO₂ uptake relative to control

TABLE 3 Cont'd...

Traverse	Station	Depth	CO ₂ Uptake (mgC/m ³ /hr)							
			Unenriched		Enriched					
			Initial	Control	NO ₃	PO ₄	Iron	Iron + NO ₃	Iron + PO ₄	
II	159a	25	1.90	1.39	0.67 x	1.33	4.97 *	3.58	3.37	
	159b	25	1.70	0.99	1.16 *	1.14 *	8.88 *	8.64	7.71	
	159c	25	1.87	1.07	1.18	1.19	9.35	9.12	10.05	
III	183	25	0.20	0.10	0.10	0.10	0.10	0.10	0.13	
	183**	25	0.20	0.08	0.08	0.10	0.08	0.08	0.12	
	185	25	0.21	0.10	0.10	0.14	0.20	0.14	0.17	
	185**	25	0.23	0.05	0.08	0.08	0.05	0.14	0.06	

x Denotes decrease in CO₂ uptake relative to control* Denotes increase in CO₂ uptake relative to control

** Pre-incubation period 3 days

TABLE 4

PHYTOPLANKTON CONTENT (DIATOMS AND DINOFLAGELLATES) OF EXPERIMENTAL SAMPLES

Inverse	Station	Depth	Cells per litre							
			Unenriched			Enriched				
			Initial	Control	NO ₃	PO ₄	Iron	Iron + NO ₃	Iron + PO ₄	
I	141	25	408	228	192	180	144	144	264	
	142	25	624	216	612	384	468	516	300	
	143	25	276	288	312	210	384	360	336	
	144	25	216	60	90	72	60	84	42	
	145	25	78	36	108	42	108	240	78	
	147	25	246	24	54	54	60	72	102	
I	141	40	408	168	132	252	264	240	120	
	142	50	480	240	168	348	336	540	420	
	143	50	164	150	198	456	252	270	216	
	144	50	144	66	72	48	300	114	18	
	145	50	48	132	108	84	78	36	60	
	147	50	150	108	114	72	90	192	302	
II	153	25	438	294	576	492	504	600	648	
	154	25	216	258	186	300	462	522	852	
	155	25	216	204	150	120	156	204	156	
	156	25	63	150	84	220	228	276	162	
	158	25	336	222	258	198	234	420	174	

TABLE 4 Cont'd...

Traverse	Station	Depth	Cells per litre							
			Unenriched		Enriched					
			Initial	Control	NO ₃	PO ₄	Iron	Iron + NO ₃	Iron + PO ₄	
II	159a	25	726	2088	3600	2076	4026	4726	3276	
	159b	25		1056	696	828	4272	3120	1224	
	159c	25		1464	1536	1068	3168	1860	3864	
III	183	25	90	60	48	84	180	84	60	
	183**	25	90	96	36	60	48	120	96	
	185	25	96	48	72	120	60	24	60	
	185**	25	96	168	36	84	84	60	12	

** Pre-incubation period 3 days

A blank indicates that no count was made

TABLE 5

DOMINANT GENERA IN ORDER OF ABUNDANCE IN EXPERIMENTAL SAMPLES

Traverse	Station	Depth	Unenriched		Enriched				
			Initial	Control	NO ₃	PO ₄	Iron	Iron + NO ₃	Iron + PO ₄
I	141	25		5,4,6,1, 11,8	1,5,6,8, 4,15	1,2,8,4, 5,6	4,6,2,5, 8	2,4,5,8, 12,17	4,5,2,15, 12,18
		40		4,6,1,5 8	1,2,4,5, 6	8,4,5,6, 1,15	4,5,2,18, 6,1	18,2,1, 8	2,5,8,15
	142	25		3,2,8,15, 4,5	2,4,5,3, 1,8	2,6,3,5, 1,7	2,1,5,6, 7,8	2,6,1,5, 7,17	2,5,1,3, 4,15
		50		2,18,4,6, 1,3	2,5,4,3, 6,8	2,4,5,15, 1,3	2,3,5,1, 4,6	2,3,18,4, 1,15	3,1,2,4, 5,6
	143	25	4,1,5,6, 8,13	2,5,3,18, 1,4	2,5,6,1, 3,4	2,1,5,6, 13,18	1,2,3,4 11	5,4,6,3, 7,8	1,5,4,6, 8,3
		50	2,4,6,15, 5,11	4,2,3,5, 15,7	2,3,4,1, 6,11	4,8,2,5, 6,15	2,9,10,6, 5,8	4,2,3,13, 14,15	2,6,4,8, 9,10
	144	25	2,8,1,3, 4,6	2,3,15	15,2,5,6, 3,4	1,2,15,9, 17	2,1,5	2,4,1,11, 17	
		50	2,4,3,12	2,5,1,3, 9,12	5,2,3,15, 17	2,4,5,8, 13,15	2,6,12,15, 3,4	2,6,1,9, 14	1,2,4
	145	25	2,4,17,1, 7,12	1,2,3,4, 12	2,4,6,8, 15,18	2,6,12	2,4,6,1, 8,3	3,5,2,1, 15,6	2,1,8,5, 8,3

TABLE 5 Cont'd...

Traverse	Station	Depth	Unenriched		Enriched				
			Initial	Control	NO ₃	PO ₄	Iron	Iron + NO ₃	Iron + PO ₄
I	145	50	1,2,3,6, 8,11	1,2,5,6, 9,11	2,5,6,1, 11,15	12,2,4, 6,9,13	2,8,9	2,3,4,6	12,1,5,2, 15,17
	147	25	3,5,17,2, 7,13	2,8,15,17	1,2,3,5, 6,17	2,15,1,3, 12	3,5,6,12, 13,15	6,8,2,4, 1	3,8,6,2, 4,13
	50	50	3,2,5,6, 13,11	1,4,2,3, 6,8	2,3,6,1, 14,11	1,3,15,5, 6,8	1,4,6,2, 8,11	5,2,4,6, 15,1	5,3,2,6, 8,13
II	153	25	1,3,6,10, 4,7	6,3,5,9, 1,7	6,1,7,9, 3,4	6,1,9,4, 7,3	1,6,3,7, 2,10	6,1,3,7, 9,2	1,3,6,7, 9,4
	154	25	6,4,1,3, 2,7	1,3,7,4, 6,15	1,2,3,6, 7,5	1,6,8,9, 17,2	1,2,6,3, 7,8	1,5,4,2, 3,7	1,2,7,6, 3,8
	155	25	1,3,6,9, 7,8	1,4,16, 8,2,5	1,4,6,2, 5,8	1,2,15,6, 5,7	1,6,15, 16,2,7	1,5,6,7, 15,3	1,2,16,4, 7,6
	156	25	5,1,2,4, 9,11	1,4,6,2, 5,11	1,2,6,11, 15,17	1,6,5,7, 16,2	1,6,2,4, 7,8	1,2,6,7, 4,11	1,4,6,7, 2,8
	158	25	5,2,4,16, 7,10	5,1,2,4, 6,14	4,2,1,5, 6,8	1,2,6,4, 5,15	2,6,4,1, 5,11	2,4,1,6, 5,8	1,4,6,2,5
	159a	25	1,4,7,3, 6,2	1,5,4,3, 6,2	1,5,4,2, 6,7	1,2,4,5, 9,12	1,4,5,6, 10,3	1,2,6,5, 3,10	1,4,2,5, 10,6

TABLE 5 Cont'd...

Traverse	Station	Depth	Unenriched		Enriched				
			Initial	Control	NO ₃	PO ₄	Iron	Iron + NO ₃	Iron + PO ₄
II	159b	25	1,6,18	1,6,4,5, 10,12	1,4,6,5, 2,7	1,4,2,6, 5,9	1,5,10,18, 2,6	1,5,6,18, 2,3	1,5,4,2, 6,10
	159c	25	1,2,5,6	1,5,4,6, 2,10	1,5,4,2, 6,10	1,4,2,6, 5,9	1,4,2,5, 18,6	1,2,4,5, 10,6	1,4,5,2, 6,18
III	183	25	6,3,2,5, 4,8	4,8,3,1	4,5,18, 6	2,6,4	13,15,2, 8,4	4,11,13, 3,8	4,11,13
	183**	25	6,3,2,5, 4,8	6,4,1,8, 13	5,7,11	6,1	4,3,6	1,6,3,5, 4	4,13,15,6
	185	25	6,5,2,1, 8	1,6,4	2,15,8, 4	6,15,4,3	4,6,15	4,8	4,13,1
	185**	25	6,5,2,1, 8	4,11,6, 8,15,1	4	4,17	4,11,13, 8,7	15,4,2	6
			** Pre-incubation period 3 days						
Key:	1	Chaetoceros	7 Bacteriastrium						
	2	Coscinodiscus	8 Ceratium						
	3	Thalassiothrix	9 Hemiaulus						
	4	Pleurosigma	10 Thalassiosira						
	5	Nitzschia	11 Oxytoxum						
	6	Rhizosolenia	12 Corethron						
			13 Podolampus						
			14 Piontoniella						
			15 Navicula						
			16 Dactyliosolen						
			17 Peridinium						
			18 Leptocylindricus						

TABLE 6

EFFECT OF VARYING IRON ENRICHMENT

(a) Station Dm 3/61/161

Depth 25 m Background

Iron Concentration: 51 $\mu\text{g/l}$

Amount of Fe added $\mu\text{g/l}$	Phytoplankton (cells/litre)	CO_2 Uptake ($\text{mgC/m}^3/\text{hr}$)
0	96	0.25
0.8	108	0.22
1.6	180	0.23
3.1	96	0.23
6.	180	0.30
12.5	228	0.26
25.0	108	0.23
50.0	156	0.29
100.0	360	0.74
200.0	276	0.79
400.0	192	0.82

(b) Station Dm 3/61/165

Depth 25 m Background

Iron Concentration: 23 $\mu\text{g/l}$

Amount of Fe added $\mu\text{g/l}$	Phytoplankton (cells/litre)			CO ₂ Uptake (mgC/m ³ /hr)		
	<u>A</u>	<u>B</u>	<u>Average</u>	<u>A</u>	<u>B</u>	<u>Average</u>
0	156	156	156	0.20	0.29	0.24
40	504	120	312	0.23	0.20	0.21
57	168	156	162	0.30	0.26	0.28
64	288	108	198	0.28	0.26	0.27
80	108	108	108	0.28	0.20	0.24
100	192	456	324	0.50	0.35	0.42
225	252	156	204	0.57	0.40	0.48

DATA

PART 5

HYDROLOGY

DEEP STATIONS

. EXPLANATION OF HEADINGSPart 5 Hydrology - Deep Stations

STATION Gives the station identification, for example, Dm 3/141/61 signifies the 141st station worked from Diamantina in 1961, on her third 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 7) follows the time.

TABLE 7CODE FOR TIME ZONES

Longitude		Time	Code
Exceeding	Up to but not exceeding	Zone (hrs)	
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

Longitude		Time	Code
Exceeding	Up to but not exceeding	Zone (hrs)	
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
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 Given in metres, measured at standard
DEPTH sound velocity of 800 fm (1463 m) per second

AIR TEMP. Air temperatures recorded from wet and
WET DRY dry bulb thermometers in °C

WIND Wind direction and speed are coded using
DIR. SP. Tables 8 and 9 in U.S. Hydrogr. Office (1955)

ANEM. The average height of the anemometer
HEIGHT above sea level, given in metres

CLOUD Cloud type and amount are coded using
TYPE AMT. Table 2 and 3 in U.S. Hydrogr. Office (1955)

VIS. Visibility is coded using Table 4 in U.S. Hydrogr. Office (1955)

SEA Sea direction and amount are coded using
DIR. AMT. Tables 5 and 8 in U.S. Hydrogr. Office (1955)

88.

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

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

TEMPERATURE

Sea temperatures recorded in °C

SALINITY

Given in parts per thousand

OXYGEN

Given in ml/l

INORG. P,
TOTAL P and
NITRATE

Given in $\mu\text{g at.}/\text{l}$

Indicates no data available

STATION DATE TIME LATITUDE LONGITUDE
 DM 3/141/61 20/ 7/61 1142 H 31 55 S 115 28 E

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

44 *** 17 04 16 * 4 7 17 2 20 1 1022.9 00 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	19.53	35.460	25.26	***	***	0.14	***	00.5
1	10	19.47	35.444	25.26	***	***	0.15	***	00.0
1	20	19.44	35.460	25.28	***	***	0.21	***	00.0
1	30	19.15	35.458	25.35	***	***	0.18	***	00.0
1	40	19.09	35.444	25.36	***	***	0.17	***	00.0

STATION DM 3/142/61 DATE 20/ 7/61 TIME 1705 H LATITUDE 31 57 S LONGITUDE 115 13 E

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

196 14.4 16.1 16 05 16 * 0 8 16 2 21 4 1020.1 05 *

LAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	20.34	35.444	25.03	***	***	0.12	***	00.0
1	25	20.23	35.444	25.06	***	***	0.12	***	00.0
1	50	20.27	35.444	25.05	***	***	0.15	***	00.0
1	75	20.32	35.516	25.09	***	***	0.12	***	00.0
1	100	20.25	35.642	25.20	***	***	0.12	***	00.0
1	150	18.25	35.778	25.82	***	***	0.15	***	00.0
1	175	17.59	35.759	25.97	***	***	0.19	***	00.0

STATION

DM 3/143/61

DATE

21/ 7/61

TIME

0758 H

LATITUDE

32 15 S

LONGITUDE

114 28 E

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

1646 12.8 16.1 07 03 16 * 0 8 07 2 18 2 1023.1 00 00

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P.	TOTAL P	NITRATE
2	0	19.95	35.471	25.15	***	***	0.09	***	00.0
2	24	19.92	35.471	25.16	***	***	0.12	***	00.0
2	49	18.91	35.615	25.53	***	***	0.12	***	00.0
2	75	17.96	35.705	25.84	***	***	0.14	***	00.0
2	98	17.72	35.759	25.94	***	***	0.14	***	00.0
2	147	16.89	35.696	26.09	***	***	0.16	***	01.5
2	196	16.11	35.669	26.25	***	***	0.21	***	02.2
2	294	11.07	34.956	26.75	***	***	0.51	***	08.2
2	489	8.00	34.560	26.94	***	***	0.94	***	20.0
2	683	5.51	34.420	27.18	***	***	1.18	***	27.0
1	875	4.39	34.406	27.30	***	***	1.58	***	30.4
1	1065	3.78	34.469	27.41	***	***	1.69	***	33.4
1	1252	3.43	34.541	27.50	***	***	1.68	***	32.8
1	1432	3.01	34.586	27.58	***	***	1.80	***	32.0

92.

STATION		DATE	TIME	LATITUDE		LONGITUDE			
DM 3/144/61		21/ 7/61	1335 H	32	10 S	113	29 E		
SONIC DEPTH	AIR TEMP.	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	AMT.	VIS.		
4490	12.2 16.1	06	03	16	*	2	8		
						06	2		
						15	3		
						1020.9	00		
							*		
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	20.46	35.498	25.04	***	***	0.12	***	00.5
1	23	20.44	35.507	25.05	***	***	0.12	***	01.5
1	45	20.43	35.507	25.05	***	***	0.13	***	00.4
1	68	20.44	35.498	25.04	***	***	0.12	***	00.0
1	90	20.49	35.498	25.03	***	***	0.13	***	00.0
1	135	20.45	35.503	25.04	***	***	0.14	***	00.0
1	181	20.49	35.498	25.03	***	***	0.18	***	00.0
1	271	18.25	35.805	25.85	***	***	0.19	***	00.0
1	452	10.69	34.920	26.79	***	***	0.61	***	02.0
1	632	8.88	34.649	26.88	***	***	0.96	***	14.3
1	811	6.19	34.433	27.10	***	***	1.25	***	27.6
1	991	4.07	34.430	27.35	***	***	1.51	***	39.8

STATION DATE TIME LATITUDE LONGITUDE

DM 3/145/61 22/ 7/61 0415 H 32 07 S 112 37 E

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

4755 13.9 17.2 04 07 16 * 2 8 04 2 00 2 1014.6 30 *

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

1 0 19.69 35.651 25.36 *** 0.09 *** 00.0

1 20 19.62 35.633 25.36 *** 0.12 *** 00.0

1 38 19.60 35.687 25.41 *** 0.15 *** 00.0

1 58 19.53 35.678 25.42 *** 0.12 *** 00.0

1 75 19.55 35.669 25.41 *** 0.14 *** 00.0

1 111 19.40 35.723 25.49 *** 0.15 *** 00.0

1 145 19.20 35.841 25.63 *** 0.15 *** 00.0

1 205 17.80 35.859 26.00 *** 0.17 *** 00.0

1 265 15.37 35.690 26.44 *** 0.31 *** 01.1

1 278 14.88 35.651 26.52 *** 0.31 *** 01.1

1 307 13.47 35.507 26.71 *** 0.40 *** 02.5

1 340 12.28 35.260 26.76 *** 0.47 *** 00.9

STATION		DATE		TIME		LATITUDE		LONGITUDE							
DM 3/148/61		23/ 7/61		2010 G		28 39 S		111 59 E							
SONIC DEPTH	AIR TEMP.	WIND		ANEM. HEIGHT	CLOUD TYPE	AMT.	VIS.	SEA DIR.	AMT.	SWELL DIR.	AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	
		DIR.	SP.												
4901	12.2	17.2	19	04	16	*	4	7	19	2	21	4	1020.0	05	*
94.															
CAST	DEPTH	TEMP.	SALINITY		SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE					
1	0	21.80	35.281		24.51	4.71	101	0.09	0.25	00.0					
1	24	21.77	35.281		24.52	4.66	100	0.12	0.25	00.0					
1	49	21.82	35.290		24.51	4.71	101	0.14	0.29	00.0					
1	74	21.77	35.308		24.54	4.66	100	0.15	***	00.0					
1	98	21.81	35.308		24.52	4.66	100	0.13	0.28	00.0					
1	147	21.79	35.290		24.52	4.71	101	0.14	***	00.0					
1	196	19.99	35.778		25.38	4.54	95	0.16	0.29	00.0					
1	292	16.12	35.778		26.34	4.77	93	0.30	0.36	00.5					
1	479	10.20	34.900		26.86	5.36	91	0.65	0.84	08.5					
1	663	8.32	34.649		26.97	5.12	84	0.97	1.13	13.0					
1	844	5.31	34.478		27.25	4.20	64	1.20	1.72	31.3					
1	1025	4.11	34.560		27.45	3.17	47	1.54	1.71	36.0					
1	1204	3.70	34.613		27.53	3.10	45	1.97	2.07	34.0					
1	1381	3.28	34.640		27.59	3.28	47	1.82	1.91	36.0					

STATION		DATE		TIME		LATITUDE		LONGITUDE		
DM 3/149/61		24/ 7/61		0808 H		26 31 S		112 33 E		
SONIC AIR TEMP.		WIND ANEM.		VIS.		SEA		ATMOS.		
DEPTH WET DRY		DIR. SP. HEIGHT		TYPE AMT.		DIR. AMT.		PRESSURE		
*** 12.8 18.9		07 03 16		* 4 7		07 2 22 3		1020.4 00 *		
CAS	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN %	SAT.	INORG. P	TOTAL P	NITRATE
1	0	21.79	35.245	24.48	4.60	99		0.12	0.30	00.0
1	25	21.77	35.254	24.49	4.83	104		0.13	0.26	00.0
1	50	21.79	35.254	24.49	4.89	105		0.13	0.25	00.0
1	75	21.38	35.597	24.86	4.77	102		0.14	***	00.0
1	100	21.26	35.624	24.92	4.66	99		0.15	0.26	00.0
1	150	19.97	35.633	25.27	4.31	90		0.22	***	03.9
1	200	18.61	35.759	25.72	4.48	91		0.25	0.36	02.0
1	300	14.71	35.561	26.49	5.06	95		0.34	0.48	03.0

STATION

DM 3/150/61

DATE _____

24/7/61

TIME

2005 H

LAT·I·TUDÆ

24 23 5

LONGITUDE

113 03 E

SONIC DEPTH	AIR TEMP. WET	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	VIS. AMT.	SEA DIR.	SWELL DIR.	ATMOS. PRESSURE	WIRE ANGLS. CAST1	WIRE ANGLS. CAST2
10	18.0	080	12	3	04	10	080	080	1013	090	090
20	17.5	080	12	3	04	10	080	080	1013	090	090
30	17.0	080	12	3	04	10	080	080	1013	090	090
40	16.5	080	12	3	04	10	080	080	1013	090	090
50	16.0	080	12	3	04	10	080	080	1013	090	090
60	15.5	080	12	3	04	10	080	080	1013	090	090
70	15.0	080	12	3	04	10	080	080	1013	090	090
80	14.5	080	12	3	04	10	080	080	1013	090	090
90	14.0	080	12	3	04	10	080	080	1013	090	090
100	13.5	080	12	3	04	10	080	080	1013	090	090
110	13.0	080	12	3	04	10	080	080	1013	090	090
120	12.5	080	12	3	04	10	080	080	1013	090	090
130	12.0	080	12	3	04	10	080	080	1013	090	090
140	11.5	080	12	3	04	10	080	080	1013	090	090
150	11.0	080	12	3	04	10	080	080	1013	090	090
160	10.5	080	12	3	04	10	080	080	1013	090	090
170	10.0	080	12	3	04	10	080	080	1013	090	090
180	9.5	080	12	3	04	10	080	080	1013	090	090
190	9.0	080	12	3	04	10	080	080	1013	090	090
200	8.5	080	12	3	04	10	080	080	1013	090	090
210	8.0	080	12	3	04	10	080	080	1013	090	090
220	7.5	080	12	3	04	10	080	080	1013	090	090
230	7.0	080	12	3	04	10	080	080	1013	090	090
240	6.5	080	12	3	04	10	080	080	1013	090	090
250	6.0	080	12	3	04	10	080	080	1013	090	090
260	5.5	080	12	3	04	10	080	080	1013	090	090
270	5.0	080	12	3	04	10	080	080	1013	090	090
280	4.5	080	12	3	04	10	080	080	1013	090	090
290	4.0	080	12	3	04	10	080	080	1013	090	090
300	3.5	080	12	3	04	10	080	080	1013	090	090
310	3.0	080	12	3	04	10	080	080	1013	090	090
320	2.5	080	12	3	04	10	080	080	1013	090	090
330	2.0	080	12	3	04	10	080	080	1013	090	090
340	1.5	080	12	3	04	10	080	080	1013	090	090
350	1.0	080	12	3	04	10	080	080	1013	090	090
360	0.5	080	12	3	04	10	080	080	1013	090	090

64	12.8	17.8	15	03	16	*	0	8	00	0	20	3	1018.8	00
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CAS	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	22.42	35.137	24.22	***	***	0.10	***	00.0
1	10	22.35	35.110	24.22	***	***	0.14	***	00.0
1	20	22.35	35.119	24.23	***	***	0.13	***	00.0
1	30	22.33	35.128	24.24	***	***	0.13	***	00.0
1	40	22.36	35.146	24.25	***	***	0.14	***	00.0
1	50	22.32	35.128	24.24	***	***	0.15	***	00.0
1	60	22.34	35.137	24.25	***	***	0.15	***	00.8

96.

STATION		DATE		TIME		LATITUDE		LONGITUDE	
DM 3/151/61		25/ 7/61		0821 H		21 56 S		113 50 E	
SONIC AIR TEMP.		WIND ANEM.		CLOUD		SEA		ATMOS.	
DEPTH WET		DIR. SP. HEIGHT		TYPE AMT.		DIR. AMT.		PRESSURE	
183 16.7 19.4		11 03 16		* 0		11 2 23 2		1015.2 00 *	
CAST		DEPTH		TEMP.		SALINITY		SIGMA-T	
1		0		23.16		35.110		23.99	
1		20		23.14		35.110		24.00	
1		40		23.20		35.110		23.98	
1		60		23.07		35.092		24.00	
1		80		23.00		35.092		24.03	
1		100		22.94		35.092		24.04	
						OXYGEN			
						4.60			
						4.71			
						4.66			
						4.54			
						4.60			
						4.66			
						101			
						103			
						102			
						99			
						101			
						102			
						0.12			
						0.12			
						0.12			
						0.10			
						0.12			
						0.13			
						0.23			
						0.22			
						0.29			
						0.29			
						0.28			
						0.28			
						0.28			
						0.28			

STATION

DATE _____

TIME

LATITUDE

LONG TUBE

DM 3/152/61.

25/ 7/61

2230 H

20 17 S

116 02 E

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

55	17.2	22.2	07	02	16	*	0	8	07	2	04	1	1015.3	00	*
55	17.2	22.2	07	02	16	*	0	8	07	2	04	1	1015.3	00	*

CASE	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	22.98	35.065	24.01	4.66	102	0.08	0.20	00.0
1	10	22.97	35.083	24.03	4.66	102	0.10	0.27	00.0
1	20	23.03	35.092	24.02	4.60	101	0.10	0.26	00.0
1	30	22.94	35.209	24.13	4.66	102	0.11	0.29	00.0
1	40	22.57	35.317	24.32	4.54	99	0.10	0.31	00.0

STATION

DATE

TIME

LATITUDE

LONGITUDE

DM 3/153/61

26/ 7/61

0831 H

19 46 S

117 54 E

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

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN & SAT.	INORG. P	TOTAL P	NITRATE
1	0	23.25	35.137	23.99	***	***	0.09	***	00.5
1	10	23.24	35.173	24.02	***	***	0.12	***	00.2
1	20	23.25	35.173	24.01	***	***	0.12	***	00.0
1	30	22.52	35.263	24.29	***	***	0.12	***	00.0
1	40	22.50	35.299	24.32	***	***	0.12	***	00.0
1	50	22.18	35.299	24.41	***	***	0.13	***	00.0

STATION		DATE		TIME		LATITUDE		LONGITUDE	
DM 3/154/61		26/ 7/61		1604 H		18 48 S		117 34 E	
SONIC AIR TEMP.		WIND		ANEM.		CLOUD		VIS.	
DEPTH WET		DIR. SP.		HEIGHT		TYPE AMT.		SEA DIR. AMT.	
*** 18.3 23.9		99 01		16		* 0		8	
								00 0	
								05 1	
								1015.1	
								00 *	
CAST		DEPTH		TEMP.		SALINITY		SIGMA-T	
		0		24.40		34.884		23.45	
		25		24.23		34.866		23.49	
		50		24.24		34.992		23.59	
		75		24.08		35.047		23.68	
		100		24.08		35.074		23.69	
		125		23.86		35.065		23.75	
		150		21.92		35.083		24.32	
		200		17.97		35.050		25.33	
								OXYGEN	
								4.60	
								4.60	
								4.54	
								4.48	
								4.54	
								4.25	
								3.51	
								3.05	
								OXYGEN % SAT.	
								99	
								98	
								97	
								96	
								97	
								90	
								72	
								59	
								INORG. P	
								0.17	
								0.16	
								0.21	
								0.22	
								0.22	
								0.34	

								0.49	
								0.84	
								TOTAL P	
								0.34	
								0.32	
								0.33	

								0.34	

								0.90	
								NITRATE	
								00.0	
								00.0	
								00.0	
								00.0	
								00.0	
								00.9	
								00.6	
								13.0	

STATION		DATE		TIME		LATITUDE		LONGITUDE						
DM 3/155/61		27/ 7/61		0440 H		18 04 S		117 10 E						
SONIC DEPTH	AIR TEMP. WET	WIND DIR.	SP.	ANEM. HEIGHT	CLOUD TYPE	AMT.	SEA DIR.	AMT.	SWELL DIR.	AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	
1500	19.4	23.3	00	00	16	*	0	8	00	0	25	1	1014.2	00 00
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN %	SAT.	INORG. P	TOTAL P	NITRATE				
2	0	24.55	34.902	23.42	4.43	99		0.11	0.26	00.2				
2	25	24.49	34.875	23.42	4.43	99		0.11	0.33	00.0				
2	50	24.50	34.875	23.42	4.43	99		0.11	0.32	00.2				
2	75	24.41	34.875	23.45	4.43	99		0.21	***	00.0				
2	100	24.20	34.875	23.51	4.37	97		0.22	0.35	00.0				
2	125	23.41	34.884	23.75	3.39	75		0.43	***	02.8				
2	150	20.84	35.056	24.60	3.05	64		0.54	***	06.0				
2	200	18.31	35.317	25.46	3.39	68		0.57	0.73	08.7				
2	250	16.02	35.326	26.01	3.45	67		0.60	***	10.5				
2	300	14.32	35.362	26.42	4.02	75		0.60	0.73	08.3				
2	400	10.22	34.920	26.87	4.78	82		0.83	***	14.0				
2	500	7.85	34.690	27.07	2.76	45		1.27	1.56	28.6				
1	700	6.10	34.667	27.30	2.30	36		1.73	1.80	35.0				
1	900	5.33	34.676	27.40	2.07	32		1.83	1.89	35.0				
1	1100	4.66	34.676	27.48	2.12	32		1.85	1.94	34.2				
1	1300	4.02	34.686	27.56	2.24	33		1.87	1.98	31.0				
1	1500	3.38	34.704	27.64	2.58	37		1.85	2.01	36.0				

101.

STATION DATE TIME LATITUDE LONGITUDE
 DM 3/156/61 27/ 7/61 1606 H 16 24 S 116 19 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2
 *** 20.6 26.7 13 02 16 * 2 H 13 2 09 1 1012.6 00 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	25.18	34.767	23.13	***	***	0.11	***	00.0
1	25	25.03	34.767	23.18	***	***	0.12	***	00.0
1	50	25.13	34.830	23.19	***	***	0.12	***	00.0
1	75	25.07	34.830	23.21	***	***	0.13	***	00.0
1	100	24.86	34.839	23.28	***	***	0.13	***	00.0
1	124	23.22	34.794	23.74	***	***	0.47	***	05.6
1	149	21.65	34.884	24.25	***	***	0.61	***	09.2
1	199	17.83	34.920	25.27	***	***	0.80	***	13.7
1	249	14.71	34.947	26.01	***	***	0.92	***	19.8
1	298	12.78	34.956	26.42	***	***	1.07	***	19.8

STATION

OM 3/157/61

DATE

26/ 7/61

TIME

0805 H

LATITUDE

13 27 S

LONGITUDE

114 58 E

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

*** 21.1 25.6 15 02 16 * 2 8 15 2 12 1 1013.5 00 00

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	25.68	34.288	22.62	4.31	98	0.10	0.25	00.8
2	25	25.67	34.306	22.63	4.31	98	0.13	0.33	01.0
2	50	25.73	34.297	22.61	4.37	100	0.14	0.31	00.5
2	75	25.68	34.297	22.62	4.37	99	0.14	***	00.0
2	100	25.23	34.496	22.91	4.37	99	0.12	0.24	00.0
2	125	24.53	34.676	23.26	3.74	84	0.34	***	01.9
2	150	22.52	34.812	23.95	3.16	68	0.52	***	06.5
2	200	18.60	34.866	25.04	2.70	55	0.84	0.87	10.3
2	250	14.51	34.676	25.85	2.47	46	1.10	***	15.0
1	300	12.23	34.670	26.31	2.42	43	1.29	1.32	18.6
1	400	10.49	34.870	26.79	3.46	57	1.12	***	19.8
1	500	8.42	34.720	27.01	3.05	50	1.28	1.39	23.4
1	699	6.47	34.676	27.26	1.89	30	1.94	1.95	29.4
1	899	5.39	34.676	27.39	2.07	32	1.96	1.98	28.2
1	1099	4.59	34.649	27.47	2.12	32	1.99	2.07	34.8
1	1299	4.06	34.676	27.54	2.35	35	2.02	2.02	32.4
1	1499	3.56	34.695	27.61	2.41	35	1.99	2.00	28.0

STATION		DATE		TIME		LATITUDE		LONGITUDE				
DM 3/159/61		29/ 7/61		1042 H		09 29 S		113 08 E				
SONIC DEPTH	AIR TEMP.	WIND	ANEM.	CLOUD	VIS.	SEA	SWELL	ATMOS.	WIRE ANGLES			
	WET	DIR. SP.	HEIGHT	TYPE AMT.		DIR. AMT.	DIR. AMT.	PRESSURE	CAST1 CAST2			
***	22.2	25.6	12 03	16	*	2	7	00 0	15 2	1012.0	20	25
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.		INORG. P	TOTAL P	NITRATE		
3	0	24.02	34.180	23.04	4.48	99	0.22	0.33	0.33	04.5		
3	25	23.54	34.171	23.17	***	***	0.15	0.33	0.33	03.9		
3	50	17.73	34.478	24.96	3.10	61	0.83	0.84	0.84	12.7		
3	75	16.09	34.487	25.35	2.70	52	0.90	***	***	21.4		
3	100	13.17	34.514	26.00	2.58	47	1.09	1.25	1.25	22.2		
3	124	11.94	34.532	26.26	2.41	43	1.22	***	***	27.0		
3	149	11.28	34.532	26.38	2.30	40	1.29	***	***	29.0		
3	198	10.68	34.622	26.56	2.07	36	1.51	1.64	1.64	30.2		
3	245	9.75	34.622	26.72	1.95	33	1.47	***	***	20.8		
3	290	9.13	34.640	26.84	2.01	33	1.49	1.57	1.57	28.2		
3	384	8.48	34.700	26.99	1.79	29	1.54	***	***	30.4		
3	478	7.45	34.680	27.12	1.79	29	1.60	1.77	1.77	31.4		
1	589	7.04	34.686	27.19	1.78	28	1.77	1.89	1.89	34.4		
1	761	6.32	34.649	27.26	1.89	29	1.80	1.96	1.96	36.6		
1	952	5.43	34.613	27.34	2.01	31	1.81	1.95	1.95	31.8		
1	1149	4.52	34.613	27.44	2.12	32	1.87	1.95	1.95	34.6		
1	1340	3.96	34.676	27.55	2.30	34	1.83	1.88	1.88	34.4		
2	1780	2.97	34.740	27.70	2.70	39	1.84	1.89	1.89	33.2		
2	2224	2.18	34.713	27.75	3.22	45	1.78	1.90	1.90	28.6		
2	2683	1.89	34.731	27.79	3.39	47	***	1.94	1.94	30.8		

STATION

DM 3/160/61

DATE

31/ 7/61

TIME

0915 H

LATITUDE

09 58 S

LONGITUDE

115 16 E

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

4112 20.0 26.7 16 02 16 * 2 8 16 2 19 2 1013.8 25 15

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	25.70	34.279	22.61	4.38	100	0.10	0.24	02.7
2	21	25.65	34.261	22.61	4.44	101	0.11	0.28	00.0
2	41	25.46	34.225	22.64	4.50	102	0.11	0.27	01.7
2	62	23.23	34.140	23.24	3.65	80	0.09	***	08.0
2	82	21.22	34.433	24.02	2.79	59	0.70	0.81	10.8
2	101	17.62	34.451	24.96	2.73	54	0.93	***	12.8
2	120	15.83	34.505	25.42	2.67	51	0.94	***	15.2
2	154	13.71	34.550	25.92	2.50	46	1.19	1.01	17.3
2	187	12.68	34.514	26.10	2.50	45	1.18	***	19.4
2	214	11.41	34.532	26.36	2.33	41	1.36	1.44	25.0
2	276	9.79	34.590	26.69	2.17	37	1.45	***	27.6
2	326	9.23	34.680	26.85	1.88	31	1.49	1.61	24.8
1	557	7.71	34.631	27.05	1.87	30	1.70	1.86	28.0
1	732	6.21	34.622	27.25	1.99	31	1.83	1.88	28.4
1	917	5.12	34.622	27.38	2.05	31	1.70	1.96	30.8
1	1110	4.46	34.637	27.47	2.16	32	1.73	1.91	31.0
1	1306	3.99	34.658	27.54	2.27	33	1.68	1.97	27.6

STATION		DATE		TIME		LATITUDE		LONGITUDE						
DM 5/162/61		1/ 8/61		1000 H		10 39 S		118 47 E						
SOLIC DEPTH	AIR TEMP. WET	WIND DIR.	SP.	ANEM. HEIGHT	CLOUD TYPE	AMT.	SEA DIR.	AMT.	SWELL DIR.	AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	
5931	21.7	26.7	16	03	16	*	0	7	00	0	22	1	1014.1	45 35
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN %	SAT.	INORG. P	TOTAL P	NITRATE				
2	0	25.48	34.180	22.60	4.72	107		0.18	0.34	06.7				
2	18	25.33	34.171	22.64	4.67	106		0.12	0.33	02.8				
2	37	24.44	34.153	22.89	4.10	91		0.32	0.52	04.4				
2	55	22.87	34.162	23.36	3.13	68		0.63	***	09.4				
2	72	21.50	34.297	23.84	3.13	66		0.72	0.81	***				
2	89	20.41	34.388	24.21	3.13	65		0.73	***	09.5				
2	106	18.77	34.451	24.68	2.79	56		0.86	***	10.0				
2	136	16.67	34.514	25.24	2.62	51		1.09	1.19	***				
2	162	15.37	34.523	25.54	2.67	51		1.08	***	15.0				
2	183	13.89	34.532	25.87	2.56	47		1.20	1.24	15.9				
2	252	12.91	34.532	26.07	2.45	44		1.25	***	20.0				
2	316	10.82	34.540	26.47	2.22	38		1.34	1.43	23.8				
1	454	8.14	34.649	27.00	1.93	31		1.80	1.83	26.0				
1	587	6.82	34.604	27.15	1.99	31		1.94	1.96	28.6				
1	736	6.15	34.613	27.25	1.99	31		1.93	1.93	27.0				
1	895	5.20	34.604	27.36	2.10	32		2.02	2.01	28.0				
1	1081	4.60	34.613	27.44	2.16	32		2.03	2.05	31.8				

STATION		DATE		TIME		LATITUDE		LONGITUDE	
DM 3/164/61		2/ 8/61		0820 H		11 40 S		122 27 E	
SONIC		WIND		ANEM.		CLOUD		SEA	
DEPTH		DIR.		SP.		HEIGHT		TYPE	
WET		DRY		TEMP.		SIGMA-T		OXYGEN	
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STATION DATE TIME LATITUDE LONGITUDE

DM 3/165/61 2/ 8/61 2017 H 12 53 S 123 14 E

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

421	21.1	26.7	17	03	16	*	2	8	00	0	00	0	1012.6	05	*
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN	% SAT.	INORG.	P	TOTAL	P	NITRATE			
1	0	26.29	34.550	22.62	***	***	***	0.16	***	***	***	00.0			
1	25	26.07	34.550	22.69	***	***	***	0.18	***	***	***	00.0			
1	49	26.04	34.640	22.77	***	***	***	0.16	***	***	***	00.0			
1	74	25.73	34.686	22.90	***	***	***	0.19	***	***	***	00.0			
1	98	25.29	34.740	23.08	***	***	***	0.34	***	***	***	03.3			
1	123	22.45	34.613	23.82	***	***	***	0.68	***	***	***	08.0			
1	147	19.75	34.559	24.51	***	***	***	0.86	***	***	***	16.0			
1	197	14.27	34.568	25.82	***	***	***	1.22	***	***	***	21.2			
1	246	11.96	34.577	26.29	***	***	***	1.43	***	***	***	24.4			
1	295	10.48	34.586	26.57	***	***	***	1.52	***	***	***	27.4			

LONGITUDE

123 49 E

ATMOS. WIRE ANGLES
PRESSURE CAST1 CAST2

30

110.

STATION

DM 5/167/61

DATE

3/ 8/61

TIME

2017 H

LATITUDE

13 05 S

LONGITUDE

125 27 E

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

66 22.2 26.7 08 04 16 * 0 8 06 2 16 1 1013.2 00 *

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

1	0	25.61	34.830	23.05	***	***	0.12	***	00.0
1	10	25.53	34.839	23.08	***	***	0.12	***	00.0
1	20	25.51	34.839	23.09	***	***	0.13	***	00.0
1	30	25.41	34.821	23.10	***	***	0.12	***	00.0
1	40	25.45	34.821	23.09	***	***	0.13	***	00.0
1	50	25.40	34.821	23.11	***	***	0.15	***	00.0
1	60	25.41	34.821	23.10	***	***	0.15	***	01.0

111.

STATION

DM 3/169/61

DATE

4/ 8/61

TIME

1636 I

LATITUDE

12 27 S

LONGITUDE

128 48 E

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

91 19.4 27.8 19 06 16 * 0 8 19 2 18 3 1013.4 00 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	25.84	34.704	22.88	***	***	0.11	***	00.5
1	20	26.04	34.704	22.82	***	***	0.10	***	00.0
1	40	26.09	34.695	22.80	***	***	0.14	***	00.5
1	60	26.04	34.695	22.81	***	***	0.14	***	00.7
1	80	26.00	34.713	22.84	***	***	0.14	***	00.7

STATION DM 3/170/61 DATE 9/ 8/61 TIME 0817 H LATITUDE 12 31 S LONGITUDE 127 14 E

SONIC AIR TEMP. WIND DIR. SP. WIND ANEM. HEIGHT CLOUD TYPE AMT. VIS. SEA DIR. AMT. SWELL DIR. AMT. ATMOS. PRESSURE WIRE ANGLES
 DEPTH WET 68 23.9 31.1 23 02 16 * 2 * 8 23 2 00 0 1013.3 00 *

CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
	0	25.62	34.767	23.00	***	***	***	0.12	***	00.5
	10	25.59	34.785	23.02	***	***	***	0.12	***	00.5
	20	25.58	34.812	23.04	***	***	***	0.17	***	00.6
	30	25.49	34.812	23.07	***	***	***	0.18	***	00.8
	40	25.48	34.839	23.09	***	***	***	0.16	***	00.5
	50	25.42	34.848	23.12	***	***	***	0.24	***	01.0
	60	25.20	34.857	23.19	***	***	***	0.24	***	06.9

STATION		DATE	TIME	LATITUDE		LONGITUDE				
DM 5/171/61		0/ 8/61	2013 H	12	35 S	124	53 E			
SONIC AIR TEMP.		WIND	ANEM.	CLOUD	VIS.	SEA	SWELL	ATMOS.	WIRE ANGLES	
DEPTH	WET	DIR.	SP.	DIR.	TYPE	DIR.	DIR.	PRESSURE	CAST1 CAST2	
91	21.1	25.6	13 02	16	*	0	00	0	1012.3 00 *	
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN %	SAT.	INORG. P	TOTAL P	NITRATE
	0	26.03	34.577	22.73	***	***		0.13	***	00.0
	20	25.92	34.568	22.75	***	***		0.15	***	00.0
	40	25.94	34.550	22.73	***	***		0.17	***	00.0
	60	26.00	34.550	22.72	***	***		0.17	***	00.0
	80	25.79	34.568	22.79	***	***		0.19	***	01.0

STATION		DATE		TIME		LATITUDE		LONGITUDE						
DM 3/172/61		13/ 8/61		2015 H		12 33 S		122 32 E						
SONIC DEPTH	AIR TEMP. WET	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	AMT.	VIS.	SEA DIR.	AMT.	SWELL DIR.	AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	WIRE ANGLES CAST2
969	22.2	26.7	15	02	16	*	0	8	15	2	00	0	1013.5	00 *
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE					
	0	25.95	34.658	22.81	4.39	96	0.11	***	00.0					
	25	25.84	34.658	22.85	4.45	97	0.11	***	00.0					
	50	25.90	34.676	22.84	4.28	93	0.14	***	00.8					
	75	25.78	34.676	22.88	4.29	94	0.14	***	00.0					
	100	25.67	34.658	22.90	4.23	92	0.20	***	00.6					
	125	22.66	34.586	23.74	2.93	61	0.73	***	10.2					
	150	19.87	34.640	24.54	2.59	51	0.92	***	14.5					
	200	15.17	34.595	25.64	2.42	44	1.28	***	24.2					
	250	13.00	34.586	26.09	2.31	40	1.40	***	27.0					
	300	11.01	34.586	26.47	2.19	36	1.57	***	28.8					

STATION	DATE	TIME	LATITUDE	LONGITUDE										
DM 3/173/61	14/ 8/61	1050 H	13 44 S	119 57 E										
SONIC AIR TEMP.	WIND	ANEM.	CLOUD	VIS.	SEA	SWELL	ATMOS.	WIRE ANGLES						
DEPTH WET	DIR. SP.	HEIGHT	TYPE	AMT.	DIR. AMT.	DIR. AMT.	PRESSURE	CAST1 CAST2						
2505	22.2	26.1	16	03	16	2	19	1	1014.9	10	05			
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN %	SAT.	INORG.	P	TOTAL P	NITRATE			
	0	25.99	34.343	22.56	4.39	96		0.15		0.31	00.0			
	20	25.78	34.315	22.61	4.39	96		0.13		0.26	00.0			
	40	25.88	34.315	22.58	4.39	96		0.22		0.37	00.0			
	51	25.77	34.315	22.61	4.34	94		0.22		***	00.0			
	81	25.77	34.315	22.61	4.23	92		0.22		0.32	00.0			
	102	25.73	34.315	22.62	4.23	96		0.24		***	00.9			
	122	24.69	34.370	22.98	3.27	73		0.56		***	07.3			
	164	20.22	34.749	24.53	2.59	54		0.86		1.02	15.6			
	205	16.94	34.713	25.33	2.53	50		1.10		***	18.6			
	250	14.63	34.713	25.85	2.36	44		1.26		1.41	25.4			
	332	11.21	34.690	26.52	2.37	41		1.47		***	29.8			
	417	9.50	34.660	26.79	2.48	42		1.56		1.73	28.0			
	598	7.87	34.631	27.02	2.53	41		1.83		1.95	29.4			
	775	6.20	34.613	27.24	2.53	39		2.07		2.27	32.4			
	970	5.03	34.613	27.39	1.97	30		2.24		2.21	34.4			
	1155	4.34	34.613	27.50	2.14	36		2.10		2.27	35.4			
	1351	3.78	34.649	27.55	2.25	33		2.20		2.30	35.4			

STATION

DM 3/174/61

DATE

15/ 8/61

TIME

0820 H

LATITUDE

15 20 S

LONGITUDE

120 45 E

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

585 20.6 27.2 16 06 16 * 0 3 16 2 16 2 1013.7 15 *

CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
0	24.99	34.686	23.13	4.45	96	0.08	0.24	00.0	
24	24.96	34.667	23.12	4.45	96	0.07	0.22	00.0	
49	25.03	34.676	23.11	4.51	97	0.10	0.21	00.0	
73	24.89	34.722	23.19	4.28	92	0.11	***	00.0	
97	24.13	34.767	23.45	3.83	82	0.29	0.43	03.3	
122	21.79	34.767	24.12	2.87	59	0.68	***	09.2	
146	19.23	34.776	24.81	2.65	52	0.88	***	13.3	
195	15.00	34.686	25.75	2.42	44	1.24	1.36	20.0	
244	13.13	34.704	26.16	2.31	40	1.34	***	24.6	
293	12.16	34.686	26.43	2.36	40	1.42	1.44	25.6	
390	9.76	34.610	26.71	2.26	37	1.68	***	30.4	
488	8.43	34.620	26.93	2.71	42	1.65	1.79	29.2	

STATION DATE TIME LATITUDE LONGITUDE
 DM 3/175/61 15/ 8/61 2013 H 16 44 S 121 04 E

SONIC AIR TEMP. WIND ANEM. CLOUD VIS. SEA SWELL ATMOS. WIRE ANGLES
 DEPTH WET DRY DIR. SP. HEIGHT TYPE AMT. DIR. AMT. DIR. AMT. PRESSURE CAST1 CAST2
 164 20.0 25.6 19 05 16 * 0 8 19 2 15 2 1013.8 00 *

CST DEPTH TEMP. SALINITY SIGMA-T OXYGEN OXYGEN % SAT. INORG. P TOTAL P NITRATE
 0 24.41 34.803 23.39 *** 0.20 *** 00.0
 20 24.40 34.803 23.39 *** 0.20 *** 00.0
 40 24.27 34.830 23.45 *** 0.22 *** 00.7
 60 24.14 34.821 23.49 *** 0.23 *** 00.8
 80 24.00 34.821 23.53 *** 0.32 *** 01.0

STATION

DATE

TIME

LATITUDE

LONGITUDE

DM 3/176/61

16/ 8/61

0819 H

17 54 S

121 57 E

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

36 13.3 22.2 10 06 16 * 0 8. 10 2 12 2 1015.9 00 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
	0	20.97	35.633	25.00	***	***	0.09	***	00.0
	5	20.92	35.633	25.02	***	***	0.08	***	00.5
	10	20.95	35.633	25.01	***	***	0.07	***	00.4
	15	20.91	35.633	25.02	***	***	0.06	***	07.1

STATION DM 3/17/61 DATE 18/ 8/61 TIME 2016 H LATITUDE 18 16 S LONGITUDE 120 44 E

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

70 21.1 25.6 23 02 16 * 0 8 23 2 00 0 1013.5 00 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
	0	23.39	35.028	23.86	***	***	0.14	***	00.0
	20	23.14	35.010	23.92	***	***	0.13	***	00.4
	40	23.07	35.019	23.95	***	***	0.19	***	00.5
	60	23.02	35.028	23.97	***	***	0.18	***	00.6

STATION		DATE	TIME	LATITUDE		LONGITUDE									
DM 5/178/61		19/ 8/61	0813 H	18	59 S	118	18 E								
SONIC	AIR TEMP.	WIND	ANEM.	CLOUD	VIS.	SEA	SWELL	ATMOS.	WIRE ANGLES						
DEPTH	WET	DIR.	SP.	HEIGHT	TYPE	DIR.	DIR.	PRESSURE	CAST1 CAST2						
104	18.3	25.0	15	04	16	*	0	8	15	2	16	2	1016.4	00	*
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN %	SAT.	INORG.	P	TOTAL	P	NITRATE			
	0	23.80	34.929	23.67	4.56	97		0.13		0.31		00.0			
	20	23.72	34.929	23.69	4.51	95		0.12		0.29		00.0			
	40	23.76	34.938	23.69	4.51	96		0.12		0.31		00.0			
	60	23.46	34.965	23.79	4.45	94		0.12		***		00.0			
	80	23.35	35.074	23.91	4.23	89		0.26		0.40		00.9			

STATION

DM 3/179/61

DATE

19/ 8/61

TIME

2012 H

LATITUDE

19 48 S

LONGITUDE

115 52 E

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

104 18.9 24.4 24 02 24 02 16 * 0 * 0 8 24 2 24 2 1016.0 00 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
0	23.30	34.980	23.85	***	***	0.16	***	00.0	
20	23.10	35.056	23.97	***	***	0.14	***	00.0	
40	22.98	35.065	24.01	***	***	0.14	***	00.0	
60	22.88	35.119	24.08	***	***	0.18	***	00.0	
80	22.91	35.119	24.07	***	***	0.17	***	00.0	

STATION		DATE		TIME		LATITUDE		LONGITUDE			
DM 3/180/61		20/ 8/61		0935 H		17 44 S		117 29 E			
SONIC DEPTH	AIR TEMP.		WIND DIR. SP.	ANEM. HEIGHT	CLOUD TYPE AMT.	VIS.	SEA		ATMOS. PRESSURE	WIRE ANGLES	
	WET	DRY					DIR. AMT.	SWELL DIR. AMT.		CAST1	CAST2
1719	21.1	26.1	20 03	16	*	0	00 0	22 2	1017.2	10	10
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN %	SAT.	INORG. P	TOTAL P	NITRATE	
	0	24.17	34.640	23.34	4.39	93	0.10	0.25	00.0		
	25	23.82	34.884	23.63	4.45	94	0.10	0.24	00.0		
	49	23.77	34.956	23.70	4.45	94	0.20	0.26	00.0		
	73	23.70	34.992	23.74	4.51	95	0.14	***	00.0		
	98	23.67	34.992	23.75	4.45	94	0.15	0.26	00.5		
	122	23.48	35.028	23.84	4.45	94	0.15	***	00.4		
	146	21.27	35.037	24.47	3.21	65	0.61	***	08.4		
	195	19.57	35.408	25.21	3.72	74	0.48	0.59	05.6		
	244	17.23	35.615	25.95	4.17	79	0.46	***	05.1		
	293	15.30	35.543	26.34	4.39	80	0.54	0.57	06.0		
	391	11.08	34.970	26.76	4.17	70	0.99	***	12.2		
	489	8.96	34.750	26.95	3.95	63	1.28	1.29	17.8		
	686	6.62	34.640	27.21	2.19	33	1.86	1.95	16.3		
889	5.44	34.649	27.37	1.97	29	2.09	2.15	16.3			
1082	4.62	34.649	27.46	2.08	30	2.03	2.16	16.0			
1281	4.06	34.667	27.54	2.19	31	2.05	2.22	16.4			
1480	3.47	34.686	27.61	2.48	34	2.01	2.20	16.7			

STATION

DATE

TIME

LATITUDE

LONGITUDE

DM 3/181/61

20/ 8/61

1714 H

16 25 S

113 57 E

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

3109 20.6 25.6 12 03 16 * 0 8 12 2 20 2 1012.2 00 *

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

0	24.83	34.505	23.04	4.56	98	0.12	***	00.0
25	24.59	34.487	23.10	4.56	97	0.12	***	00.0
50	24.61	34.680	23.24	4.34	93	0.16	***	00.5
75	22.25	34.938	24.12	3.21	66	0.54	***	07.8
99	19.92	34.992	24.80	3.04	61	0.70	***	10.4
124	17.77	35.092	25.42	2.98	57	0.76	***	13.0
149	16.35	35.128	25.78	3.04	57	0.98	***	14.4
199	15.35	35.110	26.00	3.04	56	0.99	***	19.0
248	14.36	35.047	26.17	3.10	56	0.96	***	21.0
298	13.71	35.065	26.32	3.21	57	0.97	***	20.5

STATION		DATE		TIME		LATITUDE		LONGITUDE							
DM 3/183/61		21/ 8/61		1056		15 05 S		111 26 E							
SONIC DEPTH	AIR TEMP.	WIND	ANEM.	CLOUD	VIS.	SEA	SWELL	ATMOS.	WIRE ANGLES						
	WET	DIR.	SP.	HEIGHT	TYPE	AMT.	DIR.	AMT.	CAST1 CAST2						
5532	21.1	25.6	11	03	16	*	0	8	11	2	19	2	1017.0	00	00
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN	% SAT.	INORG. P	TOTAL P	NITRATE					
	0	24.93	34.534	23.03	4.34		93	0.12	0.21	00.0					
	25	24.85	34.514	23.04	4.45		95	0.10	0.23	01.6					
	49	25.01	34.505	22.99	4.45		96	0.10	0.23	00.0					
	73	24.85	34.496	23.03	4.45		96	0.12	***	02.7					
	98	24.77	34.514	23.07	4.39		94	0.11	0.24	00.0					
	122	22.70	34.767	23.86	3.32		69	0.52	***	06.2					
	147	21.67	34.974	24.31	3.32		68	0.54	***	08.1					
	195	18.94	35.173	25.19	3.32		65	0.66	0.77	10.5					
	244	16.69	35.290	25.83	3.38		64	0.71	***	12.2					
	293	14.27	35.236	26.33	3.60		65	0.84	0.93	12.0					
	391	10.64	34.930	26.81	4.12		68	1.07	***	22.0					
	488	8.89	34.710	26.93	4.12		65	1.23	1.35	23.4					
	686	7.01	34.640	27.16	2.03		31	1.95	2.13	34.2					
	880	5.70	34.622	27.31	1.91		28	2.13	2.19	35.4					
1077	4.78	34.622	27.42	2.03		29	2.13	2.30	34.6						
1274	4.17	34.640	27.48	2.19		31	2.10	2.32	26.2						
1473	3.64	34.667	27.58	2.42		34	2.10	2.31	26.2						

STATION		DATE		TIME		LATITUDE		LONGITUDE									
DM 3/184/61		21/ 8/61		2015		15 03 S		110 00 E									
SONIC		WIND		ANEM.		CLOUD		VIS.		SEA		SWELL		ATMOS.		WIRE ANGLES	
DEPTH	AIR TEMP.	WET	DIR.	SP.	HEIGHT	TYPE	AMT.	DIR.	AMT.	DIR.	AMT.	DIR.	AMT.	PRESSURE	CAST1	CAST2	
5577	20.6	25.6	17	03	16	*	0	8	17	2	21	2	1014.0	00	*		
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN	% SAT.	INORG.	P	TOTAL	P	NITRATE					
	0	25.41	34.334	22.73	4.58	99	0.14	***	01.0								
	25	25.36	34.334	22.75	4.47	97	0.16	***	01.0								
	49	25.40	34.334	22.74	4.46	97	0.16	***	01.0								
	74	25.34	34.334	22.76	4.52	98	0.14	***	01.0								
	98	25.20	34.343	22.81	4.58	99	0.20	***	01.3								
	123	23.60	34.613	23.49	3.70	78	0.43	***	04.1								
	147	22.29	34.938	24.11	3.64	75	0.44	***	04.0								
	196	20.07	35.164	24.89	3.58	71	0.55	***	06.5								
	245	16.45	35.137	25.77	3.17	59	0.85	***	12.7								
	295	14.36	35.137	26.23	3.28	59	0.94	***	13.7								

STATION

DM 3/185/61

DATE

22/ 8/61

TIME

0918

LATITUDE

17 16 S

LONGITUDE

110 00 E

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

5029 20.0 23.3 17 04 16 * 4 7 17 2 18 2 1015.5 00 00

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
	0	24.55	34.370	23.02	4.58	98	0.09	0.28	00.7
	22	24.45	34.541	23.18	4.58	98	0.09	0.31	00.7
	43	24.43	34.514	23.17	4.64	99	0.10	0.32	00.7
	65	24.38	34.532	23.20	4.58	98	0.09	***	00.7
	88	23.94	34.839	23.56	4.40	93	0.11	0.32	00.7
	110	22.71	34.992	24.03	3.70	77	0.41	***	03.2
	133	21.54	35.019	24.38	3.46	71	0.53	***	07.0
	178	20.15	35.272	24.95	3.64	73	0.54	0.66	06.7
	225	19.13	35.615	25.48	4.11	81	0.34	***	03.4
	273	17.83	35.741	25.90	4.46	86	0.32	0.54	02.5
	370	12.04	35.110	26.69	4.82	82	0.69	***	08.9
	468	9.36	34.770	26.90	4.99	80	0.99	1.16	09.3
	667	6.42	34.586	27.19	2.93	44	1.88	1.98	29.2
	866	5.58	34.649	27.35	2.05	30	2.14	2.32	34.8
	1066	4.78	34.649	27.44	2.05	29	2.13	2.29	36.9
	1266	4.19	34.667	27.52	2.29	32	2.04	2.21	36.6
	1466	3.53	34.713	27.63	2.64	37	2.05	2.22	35.4

STATION DATE TIME LATITUDE LONGITUDE
 DM 5/186/61 22/ 8/61 2017 19 22 S 109 54 E

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

4023 17.2 23.3 16 04 16 * 2 8 16 3 16 2 1017.9 05 *

CAST DEPTH TEMP. SALINITY SIGMA-T OXYGEN OXYGEN % SAT. INORG. P TOTAL P NITRATE
 0 24.85 34.622 23.12 4.81 104 0.09 *** 00.0
 24 23.81 34.622 23.43 4.75 101 0.09 *** 00.0
 47 24.03 34.965 23.63 4.58 97 0.11 *** 00.0
 71 23.89 34.992 23.69 4.58 97 0.19 *** 02.5
 95 23.28 35.001 23.87 4.64 98 0.14 *** 02.0
 119 23.00 35.110 24.04 4.52 95 0.18 *** 01.8
 143 21.78 35.182 24.44 3.93 81 0.41 *** 05.7
 191 19.55 35.326 25.15 3.70 73 0.56 *** 06.6
 239 17.89 35.633 25.80 4.22 81 0.43 *** 05.6
 287 15.68 35.543 26.26 4.58 85 0.50 *** 05.4

STATION

DATE

TIME

LATITUDE

LONGITUDE

DM 3/187/61

23/ 8/61

0910

21 36 S

110 00 E

SONIC AIR TEMP.

WIND DIR. SP.

ANEM. HEIGHT

CLOUD TYPE AMT.

VIS.

SEA DIR. AMT.

SWELL DIR. AMT.

ATMOS. PRESSURE

WIRE ANGLES CAST1 CAST2

DEPTH	WET	TEMP.	16	04	16	*	0	8	16	2	18	2	1015.7	00	00	
4938	16.1	22.2	22.2	16	04	16	*	0	8	16	2	18	2	1015.7	00	00

CAST

DEPTH

TEMP.

SALINITY

SIGMA-T

OXYGEN

OXYGEN % SAT.

INORG. P

TOTAL P

NITRATE

0

21.97

35.164

24.37

4.46

92

0.22

0.32

00.0

25

21.88

35.164

24.39

4.93

101

0.25

0.31

00.0

50

21.32

35.281

24.64

4.99

102

0.16

0.28

00.0

75

21.09

35.362

24.77

4.93

100

0.17

00.0

100

20.83

35.507

24.95

4.81

98

0.17

0.23

00.0

150

18.93

35.534

25.47

4.05

79

0.46

02.7

200

18.14

35.787

25.86

4.75

92

0.27

0.34

01.5

299

14.65

35.552

26.49

5.11

92

0.36

0.44

06.5

442

10.82

34.947

26.79

5.22

87

0.74

0.84

11.6

602

8.50

34.631

26.93

5.11

80

1.14

1.22

16.6

768

5.52

34.520

27.26

3.35

49

1.99

1.99

33.6

940

5.05

34.604

27.38

2.29

33

2.13

2.20

39.0

1118

4.28

34.604

27.46

2.40

34

2.08

2.19

37.2

1298

3.76

34.622

27.53

2.76

39

2.07

2.22

39.2

STATION
DM 3/188/61

DATE
23/ 8/61

TIME
2019

LATITUDE
23 11 S

LONGITUDE
109 59 E

SONIC AIR TEMP.
DEPTH WET DRY 21.7

WIND DIR. SP. 00 00

ANEM. HEIGHT 16

CLOUD TYPE AMT. * 0

VIS. 8

SEA DIR. AMT. 00 0

SWELL DIR. AMT. 19 2

ATMOS. PRESSURE 1015.1

WIRE ANGLES CAST1 CAST2 * 00 *

CAST DEPTH TEMP. 0 22.95

24 22.77

48 22.60

71 21.98

95 21.53

142 20.22

190 18.67

284 15.37

SALINITY 35.001

35.001

35.047

35.210

35.344

35.561

35.687

35.787

SIGMA-T 23.97

24.02

24.10

24.40

24.63

25.15

25.65

26.51

OXYGEN 4.87

4.93

4.93

4.94

4.99

4.34

4.46

5.05

OXYGEN & SAT. 102

103

102

102

102

87

87

93

INORG. P 0.10

0.10

0.11

0.13

0.19

0.27

0.31

0.37

TOTAL P ***

NITRATE 03.0

00.0

00.0

00.0

01.8

03.3

03.5

03.5

STATION		DATE		TIME		LATITUDE		LONGITUDE							
DM 3/189/61		24/ 8/61		0816		25 29 S		110 02 E							
SONIC DEPTH	AIR TEMP. WET	WIND DIR.	SP. DIR.	ANEM. HEIGHT	CLOUD TYPE	AMT.	VIS.	SEA DIR.	AMT.	SWELL DIR.	AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	
3795	14.4	21.1	25	02	16	*	2	8	25	2	22	2	1015.9	00	00
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN %	SAT.	INORG. P	TOTAL P	NITRATE					
0	20.37	35.380	24.97	5.11	103	0.09	0.27	02.2							
24	20.37	35.435	25.01	5.11	103	0.07	0.19	01.4							
48	20.21	35.525	25.12	5.05	101	0.07	0.21	01.5							
71	20.13	35.534	25.15	5.05	101	0.10	***	01.5							
94	19.92	35.741	25.37	4.75	95	0.12	0.27	01.8							
140	18.60	35.778	25.74	4.69	92	0.20	***	02.5							
186	17.35	35.814	26.07	4.93	94	0.19	0.28	02.3							
277	14.10	35.470	26.55	5.16	92	0.35	0.53	04.4							
459	9.78	34.803	26.85	5.34	87	0.78	0.88	12.0							
639	8.18	34.586	26.94	5.05	79	1.15	1.26	21.1							
825	5.20	34.430	27.22	4.06	59	1.72	1.84	25.8							
1010	4.30	34.530	27.40	2.99	42	1.98	2.04	33.4							
1197	3.78	34.586	27.50	2.87	40	2.02	2.07	34.8							
1385	3.40	34.613	27.56	3.05	42	2.04	2.11	47.0							

STATION DATE TIME LATITUDE LONGITUDE
 DM 3/190/61 24/ 8/61 2015 27 27 S 110 00 E

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

5577 16.7 20.6 29 02 16 * 2 8 29 2 24 2 1014.1 00 *

CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN %	SAT.	INORG. P	TOTAL P	NITRATE
	0	19.82	35.570	25.26	5.22	104		0.11	***	01.5
	24	19.70	35.570	25.29	5.22	104		0.11	***	00.0
	48	19.61	35.597	25.34	5.16	102		0.12	***	00.0
	71	19.39	35.741	25.51	5.11	101		0.12	***	00.0
	95	19.22	35.805	25.60	5.16	102		0.12	***	00.0
	143	18.48	35.814	25.79	5.05	98		0.19	***	02.5
	190	17.23	35.832	26.12	4.99	95		0.25	***	01.8
	283	14.14	35.489	26.55	5.16	92		0.41	***	03.5

STATION		DATE		TIME		LATITUDE		LONGITUDE							
DM 3/191/61		25/ 8/61		0808		29 22 S		110 04 E							
SONIC DEPTH	AIR TEMP.	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	VIS. AMT.	SEA DIR.	SWELL DIR.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2				
5486	14.4	18.9	21	06	16	*	2	7	21	2	24	3	1014.0	05	15
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN %	SAT.	INORG. P	TOTAL P	NITRATE					
	0	19.70	35.570	25.30	5.22	104	0.11	***	***	02.2					
	22	19.56	35.588	25.34	5.22	104	0.11	***	***	02.0					
	44	19.29	35.660	25.47	5.22	103	0.12	***	***	02.3					
	67	19.25	35.660	25.48	5.22	103	0.10	***	***	01.4					
	89	19.26	35.667	25.48	5.22	103	0.10	***	***	***					
	134	18.83	35.823	25.71	4.99	98	0.19	***	***	01.4					
	179	17.97	35.850	25.95	5.11	99	0.21	***	***	01.8					
	268	14.88	35.498	26.40	5.28	96	0.31	***	***	04.1					
	450	10.04	34.839	26.84	5.69	93	0.76	***	***	11.6					
	635	8.54	34.622	26.92	5.46	86	1.14	***	***	10.5					
	817	5.70	34.425	27.16	4.59	67	1.65	***	***	13.5					
	1003	4.25	34.510	27.39	3.65	52	1.93	***	***	17.7					
	1193	3.62	34.541	27.48	3.40	47	2.01	***	***	37.6					
	1385	3.25	34.566	27.55	3.46	48	2.06	***	***	35.4					

STATION

DM 3/192/61

DATE

25/ 8/61

TIME

2007

LATITUDE

31 00 S

LONGITUDE

110 05 E

SONIC AIR TEMP. WIND DIR. SP. ANEM. HEIGHT CLOUD TYPE AMT. VIS. SEA DIR. AMT. SWELL DIR. AMT. ATMOS. PRESSURE WIRE ANGLES
 DEPTH WET DRY 15.0 25 02 16 * 2 * 2 7 25 2 23 4 1016.0 05 *

5212 11.7 15.0 25 02 16 * 2 * 2 7 25 2 23 4 1016.0 05 *

CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
0	16.72	35.832	26.24	5.46	103	0.20	***	01.4	
24	16.71	35.850	26.25	5.34	101	0.13	***	01.4	
48	16.69	35.850	26.26	5.46	103	0.18	***	00.0	
72	16.49	35.850	26.30	5.40	102	0.18	***	00.0	
96	16.21	35.832	26.36	5.46	102	0.19	***	00.0	
144	15.80	35.769	26.40	5.52	102	0.19	***	01.4	
191	14.34	35.525	26.54	5.29	95	0.42	***	04.4	
287	12.55	35.254	26.70	5.46	94	0.55	***	05.3	

STATION		DATE		TIME		LATITUDE		LONGITUDE							
DM 3/193/61		26/ 8/61		2007		32 02 S		111 45 E							
SONIC DEPTH	AIR TEMP. WET	WIND DIR.	WIND SP.	ANEM. HEIGHT	CLOUD TYPE	AMT.	VIS.	SEA DIR.	AMT.	SWELL DIR.	AMT.	ATMOS. PRESSURE	WIRE ANGLES CAST1	CAST2	
4956	10.0	15.6	23	02	16	*	4	7	23	2	22	4	1019.3	00	05
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN %	SAT.	INORG.	P	TOTAL	P	NITRATE			
1	0	19.24	35.570	25.43	5.17	102		0.11		***		00.0			
1	23	19.20	35.570	25.43	5.29	104		0.11		***		00.0			
1	46	19.21	35.750	25.57	5.17	102		0.10		***		00.0			
1	70	19.21	35.570	25.43	5.23	103		0.11		***		00.0			
1	93	19.23	35.570	25.43	5.17	102		0.11		***		00.0			
1	139	19.22	35.570	25.43	5.17	102		0.12		***		01.4			
1	186	19.23	35.590	25.45	5.17	102		0.12		***		01.8			
1	279	17.58	35.840	26.05	5.17	99		0.17		***		00.8			
1	470	12.15	35.160	26.71	5.46	93		0.50		***		05.4			
1	656	9.24	34.740	26.91	5.58	89		0.94		***		11.5			
1	841	7.70	34.650	27.07	5.00	77		1.25		***		19.4			
1	1035	4.65	34.430	27.30	4.36	62		1.77		***		32.6			
1	1223	3.76	34.560	27.49	3.72	52		1.79		***		27.8			
1	1411	3.19	34.670	27.63	3.60	50		1.94		***		31.2			
1	1883	2.64	34.760	27.75	3.60	49		1.97		***		33.0			
1	2358	2.15	34.760	27.80	3.72	50		1.93		***		35.4			
1	2815	1.86	34.760	27.82	4.01	54		1.92		***		33.4			
1	3266	1.59	34.760	27.83	4.18	55		1.91		***		32.4			
1	3763	1.41	34.760	27.85	4.24	56		1.87		***		33.0			
1	4195	1.23	34.760	27.87	4.41	58		1.80		***		30.1			
1	4703	1.15	34.760	27.87	4.59	60		1.84		***		26.0			

DATA

PART 6

PRIMARY PRODUCTION

Part 6 Primary Production

STATION	Gives the station identification, for example, Dm 3/149/61 signifies the 149th station worked from <u>Diamantina</u> in 1961, on her 3rd cruise for that year.
DATE	Given as day/month/year.
TIME	Given in Zone Time (Table 7, p86).
LATITUDE LONGITUDE	Given in degrees and minutes.
INCUBATION METHOD	ARTIFICIAL CONSTANT LIGHT 0 means incubation under constant fluorescent light. IN SITU 5 means incubation from noon to sunset by suspension from a buoy.
¹⁴ C STOCK	Stock number used.
ACTIVITY	Activity of ¹⁴ C stock used, recorded in counts per minute.
BACKGROUND	Background count recorded in counts per minute.
DEPTH	Depth of sampling in metres.
LIGHT	The counts per minute of the filters from the clear bottles. Where two values are given at the one depth they are from duplicate samples.
MEAN	The mean of two Light Counts. If the difference between this mean and the light counts is more than 50% of the mean, it is considered aberrant, and the symbol "N" placed after it. However, it is used for calculations of production.
DARK	The counts per minute of the filter from the dark bottle. If the Dark Count is more than 50 cpm and also more than 10% of the mean light count, it is considered aberrant, is not used, and the symbol "B" is placed after it.
DARK USED	This is usually the same as the Dark Count. If the Dark Count is aberrant the mean of the dark counts which are not aberrant at that station is used, and the symbol "E" is placed after it.
NETT	The difference between MEAN and DARK USED. Where only one LIGHT COUNT is present this is used in place of MEAN. If NETT is negative, the symbol "G" is placed after it and for further calculations the value is assumed to be zero.
INC. PER.	Incubation period.
PRODUCTION A	The calculated rate of production per cubic metre at the given depth. For samples incubated <u>in situ</u> from noon to sunset the production has been multiplied by the factor 2 to give the production per day.
PRODUCTION B	The integrated production under one square metre from the surface to the given depth. For samples incubated under artificial constant light the production per hour has been multiplied by the factor 10 to give the production per day.

**

Indicates no data.

The symbol "K" placed after a value indicates that it is considered doubtful.

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/149/61	24/ 7/61	0815 H	26 31 S	112 33 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLION	10 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	364	**	20	20	344	04.00	00.24	00.00
25	521	**	12	12	509	04.00	00.36	00.08
50	518	**	12	12	506	04.00	00.36	00.17
75	64	**	15	15	49	04.00	00.03	00.21
100	40	**	22	22	18	04.00	00.01	00.22
150	18	**	8	8	10	04.00	00.01	00.22

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/151/61	25/ 7/61	0825 H	21 56 S	113 50 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLICN	10 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	2630	**	28	28	2602	04.08	01.81	00.00
25	3154	**	28	28	3126	04.08	02.17	00.50
50	2002	**	22	22	1980	04.08	01.37	00.94
75	1562	**	31	31	1531	04.08	01.06	01.24
100	1340	**	13	13	1327	04.08	00.92	01.49

STATION DATE TIME LATITUDE LONGITUDE
 DM 3/157/61 28/ 7/61 0845 H 13 27 S 114 58 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND

ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLION 10 CPM

DEPTH LIGHT LIGHT CPM MEAN DARK DARK USED LEFT INC. PER. PRODUCTION A PRODUCTION B
 M CPM CPM CPM CPM CPM CPM HOURS MG.C/HR./CU.M. G.C/DAY/SQ.M.

0	860	**	**	14	14	846	04.00	00.60	00.00
25	906	**	**	10	10	896	04.00	00.63	00.15
50	907	**	**	30	30	877	04.00	00.62	00.31
75	1896	**	**	14	14	1882	04.00	01.33	00.55
100	340	**	**	15	15	325	04.00	00.23	00.75
150	17	**	**	10	10	7	04.00	00.00	00.81

STATION DATE TIME LATITUDE LONGITUDE
 DM 5/159/61 30/ 7/61 1115 H 09 29 S 113 07 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND
 IN SITU 5 NOON - SUNSET 9 8.67 MILLION 10 CPM

DEPTH LIGHT LIGHT MEAN DARK DARK USED NETT INC. PER. PRODUCTION A PRODUCTION B
 M CPM CPM CPM CPM CPM CPM DAYS MG.C/DAY/CU.M. G.C/DAY/SQ.M.

142.

0	8383	**	49	49	8334	00.50	47.19	00.00
25	1642	**	53	53	1589	00.50	09.00	00.70
50	57	**	11	11	46	00.50	00.26	00.82
75	9	**	20	20	11 G	00.50	00.00	00.82
100	9	**	11	11	2 G	00.50	00.00	00.82
150	14	**	6	6	8	00.50	00.05	00.82

G NEGATIVE VALUE, ASSUMED ZERO

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/159/61	30/ 7/61	1130 H	09 29 S	113 07 E

INCUBATION METHOD	PERIOD	¹⁴ C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT	0 4 HOURS	9	8.67 MILLION	10 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	10046	**	52	52	9994	04.07	06.95	00.00
25	3863	**	22	22	3841	04.07	02.67	01.20
50	109	**	7	7	102	04.07	00.07	01.55
75	61	**	14	14	47	04.07	00.03	01.56
100	35	**	2	2	33	04.07	00.02	01.56
150	26	**	8	8	18	04.07	00.01	01.57

STATION

DATE

TIME

LATITUDE

LONGITUDE

DM 3/159/61

30/ 7/61

1150 H

09 29 S

113 07 E

INCUBATION METHOD

PERIOD

14C STOCK

ACTIVITY CPM

BACKGROUND

ARTIFICIAL CONSTANT LIGHT 0

5 HOURS

9

8.67 MILLION

15 CPM

DEPTH LIGHT

MEAN

DARK

DARK USED

NETT

INC. PER.

PRODUCTION A

PRODUCTION B

M CPM

CPM

CPM

CPM

CPM

HOURS

MG.C/HR./CU.M.

G.C/DAY/SQ.M.

0 10141

10069

10105

36

36

10069

04.66

06.12

00.00

25 4361

**

**

48

48

4313

04.66

02.62

01.09

50 177

184

181

25

25

156

04.66

00.09

01.43

75 47

79

63

8

8

55

04.66

00.03

01.45

100 46

27

37

2

2

35

04.66

00.02

01.45

150 185

77

131 N

8

8

123

04.66

00.07

K

01.48

N DUPLICATE VALUES ABERRANT

K DOUBTFUL RESULT

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/159/61	30/ 7/61	1745 H	09 29 S	113 07 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLICN	15 CPM

DEPTH LIGHT		LIGHT	MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	3957	**	**	81	81	3876	04.00	02.74	00.00
25	3525	**	**	40	40	3485	04.00	02.47	00.65
50	879	**	**	17	17	862	04.00	00.61	01.04
75	103	**	**	8	8	95	04.00	00.07	01.12
100	45	**	**	5	5	40	04.00	00.03	01.13
150	38	**	**	6	6	32	04.00	00.02	01.15

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/159/61	30/ 7/61	1800 H	09 29 S	113 07 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLION	15 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.

0	3733	**	109	109	3624	04.00	02.56	00.00
25	2232	**	39	39	2193	04.00	01.55	00.51
50	93	**	5	5	88	04.00	00.06	00.72
75	147	**	6	6	141	04.00	00.10	00.74
100	86	**	12	12	74	04.00	00.05	00.75
150	63	**	8	8	55	04.00	00.04	00.78

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/160/61	31/ 7/61	0745 H	09 58 S	115 15 E

INCUBATION METHOD	PERIOD	¹⁴ C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLION	15 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	1499	**	14	14	1485	04.08	01.03	00.00
25	1911	**	29	29	1882	04.08	01.31	00.29
50	1100	**	25	25	1075	04.08	00.75	00.55
75	318	**	24	24	294	04.08	00.20	00.67
100	73	**	**	19 E	54	04.08	00.04	00.70
150	22	**	5	5	17	04.08	00.01	00.71

147.

E	MEAN	NON-ABERRANT	DARK	USED
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STATION DATE TIME LATITUDE LONGITUDE
 DM 3/162/61 1/ 8/61 0900 H 10 39 S 118 46 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND
 ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLION 15 CPM

DEPTH LIGHT LIGHT MEAN DARK DARK DARK USED NETT INC. PER. PRODUCTION A PRODUCTION B
 M CPM CPM CPM CPM CPM CPM CPM CPM MG.C/HR./CU.M. G.C/DAY/SQ.M.

0	651	**	73 B	31 E	620	04.00	00.44	00.00
25	1943	**	46	46	1897	04.00	01.34	00.22
50	768	**	318 B	31 E	737	04.00	00.52	00.46
75	194	**	21	21	173	04.00	00.12	00.54
100	37	**	41	41	4 G	04.00	00.00	00.55
150	25	**	16	16	9	04.00	00.01	00.55

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

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 5/164/61	2/ 8/61	0900 H	11 40 S	122 27 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLION	15 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	747	**	22	22	725	04.00	00.51	00.00
25	551	**	24	24	527	04.00	00.37	00.11
50	554	**	28	28	526	04.00	00.37	00.20
75	958	**	16	16	942	04.00	00.67	00.33
100	20	**	25	25	5 G	04.00	00.00	00.42
150	9	**	14	14	5 G	04.00	00.00	00.42

G NEGATIVE VALUE, ASSUMED ZERO

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/166/61	3/ 8/61	0800 I	14 42 S	123 49 E
INCUBATION METHOD	PERIOD	¹⁴ C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT	0 4 HOURS	9	8.67 MILLION	15 CPM
DEPTH LIGHT	MEAN	DARK	DARK USED	NETT
M CPM	CPM	CPM	CPM	CPM
0 2325	**	17	17	2308
25 3872	**	23	23	3849
50 3132	**	26	26	3106
			INC. PER.	PRODUCTION A
			HOURS	MG.C/HR./CU.M.
			04.00	01.63
			04.00	02.72
			04.00	02.20
				G.C/DAY/SQ.M.
				00.00
				00.54
				01.16

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/168/61	4/ 8/61	0800 I	12 42 S	127 22 E
INCUBATION METHOD				
PERIOD		14C STOCK	ACTIVITY CPM	BACKGROUND
4 HOURS		9	8.67 MILLION	15 CPM
ARTIFICIAL CONSTANT LIGHT 0				
151.				
DEPT H LIGHT				
M	CPM	MEAN	INC. PER.	PRODUCTION A
		CPM	HOURS	MG.C/HR./CU.M.
		CPM		G.C/DAY/SQ.M.
0	1660	1664	67	01.13
25	1797	1639	49	01.18
50	1981	2116	71	01.40
			04.00	00.00
			04.00	00.29
			04.00	00.61

STATION		DATE	TIME	LATITUDE		LONGITUDE
DM 3/170/61		9/ 8/61	0815 H	12	31 S	127 14 E
INCUBATION METHOD		PERIOD	14C STOCK	ACTIVITY CPM		BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0		4 HOURS	9	8.67 MILLION		15 CPM
DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.
M	CPM	CPM	CPM	CPM	CPM	MG.C/HR./CU.M.
0	2018	**	57	57	1961	04.00
25	3607	**	32	32	3575	04.00
50	939	**	30	30	909	04.00
						01.39
						02.53
						00.64
						00.00
						00.49
						00.89

STATION		DATE	TIME	LATITUDE		LONGITUDE	
DM 3/171/61		9/ 8/61	2010 H	12	35 S	124	53 E
INCURATION METHOD		PERIOD	14C STOCK	ACTIVITY CPM		BACKGROUND	
ARTIFICIAL CONSTANT LIGHT 0		4 HOURS	9	8.67 MILLION		15 CPM	
DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.
							G.C/DAY/SQ.M.
0	978	**	45	45	933	04.00	00.66
25	788	**	62	62	726	04.00	00.51
50	1422	**	21	21	1401	04.00	00.99
75	414	**	12	12	402	04.00	00.28
							00.00
							00.15
							00.33
							00.49

STATION

DATE

TIME

LATITUDE

LONGITUDE

DM 3/172/61

13/ 8/61

2100 H

12 33 S

122 32 E

INCUBATION METHOD

PERIOD

14C STOCK

ACTIVITY CPM

BACKGROUND

ARTIFICIAL CONSTANT LIGHT 0

4 HOURS

9

8.67 MILLION

15 CPM

DEPTH LIGHT

LIGHT

MEAN

DARK

DARK USED

NETT

INC. PER.

PRODUCTION A

PRODUCTION B

M

CPM

CPM

CPM

CPM

CPM

CPM

HOURS

MG.C/HR./CU.M.

G.C/DAY/SQ.M.

0

264

**

**

34

34

230

04.00

00.16

00.00

25

250

**

**

38

38

212

04.00

00.15

00.04

50

722

**

**

18

18

704

04.00

00.50

00.12

75

360

**

**

23

23

337

04.00

00.24

00.21

100

35

**

**

9

9

26

04.00

00.02

00.25

150

17

**

**

13

13

4

04.00

00.00

00.25

STATION DM 3/173/61 DATE 14/ 8/61 TIME 1100 H LATITUDE 13 44 S LONGITUDE 119 56 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND 15 CPM

ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLION PRODUCTION A MG.C/HR./CU.M. G.C/DAY/SQ.M.

155.

DEPTH	LIGHT	CPM	MEAN	DARK	CPM	DARK	CPM	USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
0	974	958	966	25	25	25	25	941	04.00	00.67	00.00	
25	661	933	797	23	23	23	23	774	04.00	00.55	00.15	
50	784	0	1201	N	10	10	10	1191	04.00	00.84	00.33	K
75	338	0	251	N	13	13	13	238	04.00	00.17	00.45	K
100	157	217	187	11	11	11	11	176	04.00	00.12	00.49	
150	22	31	27	19	19	19	19	8	04.00	00.01	00.52	

0 SUSPECT 14C ADDED TWICE
N DUPLICATE VALUES ABERRANT
K DOUBTFUL RESULT

STATION
DM 3/173/61

DATE
14/ 8/61

TIME
1115 H

LATITUDE
13 44 S

LONGITUDE
119 56 E

INCUBATION METHOD

PERIOD
4 HOURS

14C STOCK
9

ACTIVITY CPM
8.67 MILLION

BACKGROUND
15 CPM

ARTIFICIAL CONSTANT LIGHT 0

DEPTH LIGHT

M CPM

MEAN 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	793	**	**	22	22	771	04.00	00.55	00.00
25	1522	**	**	52	52	1470	04.00	01.04	00.20
50	1967	**	**	29	29	1938	04.00	01.37	00.50
75	546	**	**	16	16	530	04.00	00.38	00.72
100	562	**	**	23	23	539	04.00	00.38	00.81
150	14	**	**	9	9	5	04.00	00.00	00.91

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/173/61	14/ 8/61	1045 H	13 44 S	119 56 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
IN SITU	5 NOON - SUNSET	9	8.67 MILLION	15 CPM

DEPTH LIGHT	LIGHT	MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	DAYS	MG.C/DAY/CU.M.	G.C/DAY/SQ.M.

0	363	**	22	22	341	00.50	01.93	00.00
25	550	**	25	25	525	00.50	02.97	00.06
50	216	**	18	18	198	00.50	01.12	00.11
75	52	**	18	18	34	00.50	00.19	00.13
100	16	**	18	18	2 G	00.50	00.00	00.13
150	16	**	10	10	6	00.50	00.03	00.13

G NEGATIVE VALUE, ASSUMED ZERO

STATION DATE TIME LATITUDE LONGITUDE
 DM 3/173/61 14/ 8/61 1700 H 13 44 S 119 56 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND
 ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLION 15 CPM

DEPTH LIGHT LIGHT MEAN DARK DARK USED NETT INC. PER. PRODUCTION A PRODUCTION B
 M CPM CPM CPM CPM CPM CPM MG.C/HR./CU.M. G.C/DAY/SQ.M.

0	765	654	710	48	48	662	04.00	00.47	00.00
25	890	872	881	49	49	832	04.00	00.59	00.13
50	1040	1025	1033	15	15	1018	04.00	00.72	00.30
75	716	384	550	21	21	529	04.00	00.37	00.43
100	64	55	60	16	16	44	04.00	00.03	00.48
150	22	29	26	22	22	4	04.00	00.00	00.49

STATION DATE TIME LATITUDE LONGITUDE
 DM 3/173/61 14/ 8/61 1715 H 13 44 S 119 56 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND

ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLION 15 CPM

DEPTH LIGHT LIGHT MEAN DARK DARK USED NETT INC. PER. PRODUCTION A PRODUCTION B
 M CPM CPM CPM CPM CPM CPM HOURS MG.C/HR./CU.M. G.C/DAY/SQ.M.

0	449	**	**	58 B	30 E	419	04.00	00.30	00.00
25	653	**	**	57	57	596	04.00	00.42	00.09
50	1293	**	**	32	32	1261	04.00	00.89	00.25
75	311	**	**	42	42	269	04.00	00.19	00.39
100	354	**	**	12	12	342	04.00	00.24	00.44
150	11	**	**	11	11	0	04.00	00.00	00.50

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

STATION DATE TIME LATITUDE LONGITUDE
 DM 3/174/61 15/ 8/61 0900 H 15 20 S 120 45 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND
 ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLION 15 CPM

DEPTH LIGHT LIGHT CPM MEAN CPM DARK CPM DARK USED NETT INC. PER. PRODUCTION A PRODUCTION B
 M CPM CPM CPM CPM CPM CPM HOURS MG.C/HR./CU.M. G.C/DAY/SQ.M.

0	620	**	**	**	23	23	597	04.00	00.42	00.00
25	778	**	**	**	17	17	761	04.00	00.54	00.12
50	982	**	**	**	24	24	958	04.00	00.68	00.27
75	679	**	**	**	20	20	659	04.00	00.47	00.42
100	101	**	**	**	11	11	90	04.00	00.06	00.48
150	125	**	**	**	15	15	110	04.00	00.08	00.52

STATION DATE TIME LATITUDE LONGITUDE
 OM 3/175/61 15/ 8/61 2030 H 16 44 S 121 04 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND
 ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLION 15 CPM

DEPTH LIGHT LIGHT MEAN DARK DARK USED NETT INC. PER. PRODUCTION A PRODUCTION B
 M CPM CPM CPM CPM CPM CPM HOURS MG.C/HR./CU.M. G.C/DAY/SQ.M.

0	744	**	37	37	707	04.00	00.50	00.00
25	476	**	34	34	442	04.00	00.31	00.10
50	859	**	21	21	838	04.00	00.59	00.21
75	647	**	17	17	650	04.00	00.45	00.34

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/178/61	19/ 8/61	0835 H	18 59 S	118 17 E

INCUBATION METHOD	PERIOD	¹⁴ C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLION	15 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	780	**	32	32	748	04.00	00.53	00.00
25	1747	**	42	42	1705	04.00	01.21	00.22
50	1822	**	31	31	1791	04.00	01.27	00.53
75	630	**	42	42	588	04.00	00.42	00.74
100	502	**	43	43	459	04.00	00.32	00.83

STATION DATE TIME LATITUDE LONGITUDE
DM 3/179/61 19/ 8/61 2025 H 19 48 S 115 52 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLION 15 CPM

DEPTH LIGHT LIGHT MEAN DARK DARK DARK USED NETT INC. PER. PRODUCTION A PRODUCTION B
M CPM CPM CPM CPM CPM CPM CPM HOURS MG.C/HR./CU.M. G.C/DAY/SQ.M.

0	232	**	**	27	27	205	04.00	00.15	00.00
25	325	**	**	30	30	295	04.00	00.21	00.05
50	568	**	**	45	45	523	04.00	00.37	00.12
75	785	**	**	18	18	767	04.00	00.54	00.23
100	773	**	**	12	12	761	04.00	00.54	00.37

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/180/61	20/ 8/61	0845 H	17 44 S	114 29 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLION	15 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.

0	408	**	11	11	397	04.00	00.28	00.00
25	490	**	16	16	474	04.00	00.34	00.08
50	1241	**	10	10	1231	04.00	00.87	00.23
75	1290	**	13	13	1277	04.00	00.90	00.45
100	580	**	6	6	574	04.00	00.41	00.61
150	27	**	6	6	21	04.00	00.01	00.72

STATION		DATE	TIME	LATITUDE		LONGITUDE
DM 3/181/61		20/ 8/61	1730 H	16	25 S	113 56 E
INCUBATION METHOD		PERIOD	14C STOCK	ACTIVITY CPM		BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0		4 HOURS	9	8.67 MILLION		15 CPM
DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.
M	CPM	CPM	CPM	CPM	CPM	MG.C/HR./CU.M.
0	172	**	24	24	148	04.00
25	225	**	30	30	195	04.00
50	284	**	36	36	248	04.00
75	314	**	21	21	293	04.00
100	575	**	13	13	562	04.00
150	372	**	10	10	362	04.00
						PRODUCTION A
						PRODUCTION B
						G.C/DAY/SQ.M.
						00.10
						00.14
						00.18
						00.21
						00.40
						00.26

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/183/61	21/ 8/61	1100 H	15 05 S	111 26 E

INCUBATION METHOD	PERIOD	¹⁴ C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLION	15 CPM

DEPTH LIGHT	LIGHT	MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.

0	207	**	9	9	198	04.08	00.14	00.00
25	229	**	16	16	213	04.08	00.15	00.04
50	350	**	13	13	337	04.08	00.23	00.08
75	387	**	11	11	376	04.08	00.26	00.15
100	490	**	9	9	481	04.08	00.33	00.22
150	9	**	9	9	0	04.08	00.00	00.30

STATION DATE TIME LATITUDE LONGITUDE
DM 3/184/61 21/ 8/61 2100 H 15 03 S 110 00 E

INCUBATION METHOD PERIOD INC STOCK ACTIVITY CPM BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLION 15 CPM

DEPTH LIGHT LIGHT MEAN DARK DARK USED NETT INC. PER. PRODUCTION A PRODUCTION B
M CPM CPM CPM CPM CPM CPM MG-C/HR./CU.M. G.C/DAY/SQ.M.

0	414	**	**	7	7	407	04.00	00.29	00.00
25	771	**	**	7	7	764	04.00	00.54	00.10
50	880	**	**	19	19	861	04.00	00.61	00.25
75	869	**	**	17	17	852	04.00	00.60	00.40
100	665	**	**	27	27	638	04.00	00.45	00.53
150	13	**	**	5	5	8	04.00	00.01	00.65

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/185/61	22/ 8/61	0845 H	17 15 S	110 00 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLION	15 CPM

DEPTH LIGHT	LIGHT	MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	329	**	7	7	322	04.00	00.23	00.00
25	223	**	19	19	204	04.00	00.14	00.05
50	404	**	15	15	389	04.00	00.28	00.10
75	514	**	7	7	507	04.00	00.36	00.18
100	356	**	8	8	348	04.00	00.25	00.26
150	7	**	**	11	4	04.00	00.00	00.32

E MEAN NON-ABERRANT DARK USED
 G NEGATIVE VALUE, ASSUMED ZERO

STATION DATE TIME LATITUDE LONGITUDE
 DM 3/186/61 22/ 8/61 2045 H 19 22 S 109 54 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND
 ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLION 15 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	83	**	18	18	65	04.00	00.05	00.00
25	86	**	21	21	65	04.00	00.05	00.01
50	321	**	29	29	292	04.00	00.21	00.05
75	165	**	9	9	156	04.00	00.11	00.09
100	187	**	29	29	158	04.00	00.11	00.11
150	24	**	4	4	20	04.00	00.01	00.14

STATION

DATE

TIME

LATITUDE

LONGITUDE

DM 3/187/61

23/ 8/61

0845 H

21 36 S

110 00 E

INCUBATION METHOD

PERIOD

14C STOCK

ACTIVITY CPM

BACKGROUND

ARTIFICIAL CONSTANT LIGHT 0

4 HOURS

9

8.67 MILLION

15 CPM

DEPTH LIGHT

MEAN

DARK

NETT

INC. PER.

PRODUCTION A

PRODUCTION B

M CPM

LIGHT

CPM

DARK

DARK USED

CPM

HOURS

MG.C/HR./CU.M.

G.C/DAY/SQ.M.

0

212

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9

9

203

04.00

00.14

00.00

25

799

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13

13

786

04.00

00.56

00.09

50

488

**

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14

14

474

04.00

00.34

00.20

75

379

**

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13

13

366

04.00

00.26

00.28

100

550

**

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21

21

529

04.00

00.37

00.35

150

8

**

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10

10

2

04.00

00.00

00.45

G NEGATIVE VALUE, ASSUMED ZERO

STATION DATE TIME LATITUDE LONGITUDE
 DM 3/188/61 23/ 8/61 2045 H 23 11 S 109 59 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND
 ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLION 15 CPM

DEPTH LIGHT LIGHT MEAN DARK DARK USED NETT INC. PER. PRODUCTION A PRODUCTION B
 M CPM CPM CPM CPM CPM CPM MG.C/HR./CU.M. G.C/DAY/SQ.M.

0	149	**	**	25	25	124	04.00	00.09	00.00
25	149	**	**	24	24	125	04.00	00.09	00.02
50	306	**	**	25	25	281	04.00	00.20	00.06
75	255	**	**	18	18	237	04.00	00.17	00.11
100	292	**	**	7	7	285	04.00	00.20	00.15
150	12	**	**	11	11	1	04.00	00.00	00.20

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/189/61	24/ 8/61	0830 H	25 28 S	110 01 E

INCUBATION METHOD	PERIOD	¹⁴ C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLION	15 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	266	**	9	9	257	04.00	00.18	00.00
25	398	**	10	10	388	04.00	00.27	00.06
50	439	**	7	7	432	04.00	00.31	00.13
75	453	**	6	6	447	04.00	00.32	00.21
100	44	**	6	6	38	04.00	00.03	00.25
150	29	**	7	7	22	04.00	00.02	00.26

STATION		DATE		TIME		LATITUDE		LONGITUDE							
DM 3/190/61		24/ 8/61		2045 H		27 27 S		109 59 E							
INCUBATION METHOD		PERIOD		14C STOCK		ACTIVITY CPM		BACKGROUND							
ARTIFICIAL CONSTANT LIGHT 0		4 HOURS		9		8.67 MILLION		15 CPM							
DEPTH LIGHT		MEAN		DARK		DARK USED		NETT		INC. PER.		PRODUCTION A		PRODUCTION B	
M	CPM	LIGHT	CPM	CPM	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.			
0	107	**	**	13	13	13	94	04.00	00.07				00.00		
25	92	**	**	18	18	18	74	04.00	00.05				00.02		
50	401	**	**	20	20	20	381	04.00	00.27				00.06		
75	210	**	**	13	13	13	197	04.00	00.14				00.11		
100	72	**	**	4	4	4	68	04.00	00.05				00.13		
150	27	**	**	7	7	7	20	04.00	00.01				00.15		

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/191/61	25/ 8/61	0850 H	29 21 S	110 04 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLION	15 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	433	**	10	10	423	04.00	00.30	00.00
25	360	**	15	15	345	04.00	00.24	00.07
50	617	**	4	4	613	04.00	00.43	00.15
75	444	**	6	6	438	04.00	00.31	00.24
100	346	**	12	12	334	04.00	00.24	00.31
150	35	**	5	5	30	04.00	00.02	00.38

STATION DATE TIME LATITUDE LONGITUDE
DM 3/192/61 25/ 8/61 2040 H 31 00 S 110 05 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLION 15 CPM

DEPTH LIGHT		LIGHT		MEAN		DARK		DARK USED		NET		INC. PER.		PRODUCTION A		PRODUCTION B	
M	CPM	CPM	CPM	CPM	CPM	CPM	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	MG.C/HR./CU.M.	G.C/DAY/SQ.M.		
0	263	**	**	**	13	13	13	13	250	250	04.00	00.18	00.18	00.00	00.00		
25	309	**	**	**	16	16	16	16	293	293	04.00	00.21	00.21	00.05	00.05		
50	374	**	**	**	22	22	22	22	352	352	04.00	00.25	00.25	00.11	00.11		
75	314	**	**	**	12	12	12	12	302	302	04.00	00.21	00.21	00.16	00.16		
100	363	**	**	**	23	23	23	23	340	340	04.00	00.24	00.24	00.22	00.22		
150	236	**	**	**	7	7	7	7	229	229	04.00	00.16	00.16	00.32	00.32		

STATION

DM 3/193/61

DATE

26/ 8/61

TIME

1120 H

LATITUDE

32 02 S

LONGITUDE

111 45 E

INCUBATION METHOD

PERIOD

14C STOCK

ACTIVITY CPM

BACKGROUND

ARTIFICIAL CONSTANT LIGHT 0

4 HOURS

9

8.67 MILLION

15 CPM

DEPTH LIGHT

LIGHT

MEAN

DARK

DARK USED

NETT

INC. PER.

PRODUCTION A

PRODUCTION B

M

CPM

CPM

CPM

CPM

CPM

CPM

HOURS

MG.C/HR./CU.M.

G.C/DAY/SQ.M.

0

905

945

925

0

0

925

04.00

00.65

00.00

25

476

355

416

3

3

413

04.00

00.29

00.12

50

800

769

785

5

5

780

04.00

00.55

00.22

75

266

405

336

5

5

331

04.00

00.23

00.32

100

727

550

639

6

6

633

04.00

00.45

00.41

150

330

232

281

8

8

273

04.00

00.19

00.57

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/193/61	26/ 8/61	1130 H	32 02 S	111 45 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLION	15 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	664	**	13	13	651	04.00	00.46	00.00
25	994	**	13	13	981	04.00	00.69	00.14
50	1062	**	15	15	1047	04.00	00.74	00.32
75	920	**	13	13	907	04.00	00.64	00.50
100	1056	**	17	17	1039	04.00	00.74	00.67
150	1021	**	14	14	1007	04.00	00.71	01.03

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/193/61	26/ 8/61	1145 H	32 02 S	111 45 E

INCUBATION METHOD	PERIOD	14C STOCK	ACTIVITY CPM	BACKGROUND
IN SITU	5 NOON - SUNSET	9	8.67 MILLION	15 CPM

DEPTH	LIGHT	MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	DAYS	MG.C/DAY/CU.M.	G.C/DAY/SQ.M.
0	294 A	**	2	2	292	00.50	01.65	00.00
25	148	**	18	18	130	00.50	00.74	00.03
50	284	**	11	11	273	00.50	01.55	00.06
75	79	**	8	8	71	00.50	00.40	00.08
100	17	**	0	0	17	00.50	00.10	00.09
150	23	**	5	5	18	00.50	00.10	00.09

A PART SAMPLE LOST

STATION DATE TIME LATITUDE LONGITUDE
 DM 3/193/61 26/ 8/61 1710 H 32 02 S 111 45 E

INCUBATION METHOD PERIOD 14C STOCK ACTIVITY CPM BACKGROUND
 ARTIFICIAL CONSTANT LIGHT 0 4 HOURS 9 8.67 MILLICN 15 CPM

DEPTH LIGHT LIGHT CPM MEAN DARK DARK USED NETT INC. PER. PRODUCTION A PRODUCTION B
 M CPM CPM CPM CPM CPM HOURS MG.C/HR./CU.M. G.C/DAY/SQ.M.

0	963	957	960	9	9	951	04.00	00.67	00.00
25	850	877	864	13	13	851	04.00	00.60	00.16
50	865	847	856	8	8	848	04.00	00.60	00.31
75	709	813	761	5	5	756	04.00	00.54	00.45
100	699	726	713	3	3	710	04.00	00.50	00.58
150	580	560	570	5	5	565	04.00	00.40	00.81

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/193/61	26/ 8/61	1720 H	32 02 S	111 45 E

INCUBATION METHOD	PERIOD	¹⁴ C STOCK	ACTIVITY CPM	BACKGROUND
ARTIFICIAL CONSTANT LIGHT 0	4 HOURS	9	8.67 MILLION	15 CPM

DEPTH LIGHT		MEAN	DARK	DARK USED	NETT	INC. PER.	PRODUCTION A	PRODUCTION B
M	CPM	CPM	CPM	CPM	CPM	HOURS	MG.C/HR./CU.M.	G.C/DAY/SQ.M.
0	529	**	17	17	512	04.00	00.36	00.00
25	943	**	22	22	921	04.00	00.65	00.13
50	735	**	18	18	717	04.00	00.51	00.27
75	993	**	13	13	980	04.00	00.69	00.42
100	900	**	14	14	886	04.00	00.63	00.59
150	762	**	16	16	746	04.00	00.53	00.88

DATA

PART 7

PIGMENTS

EXPLANATION OF HEADINGSPart 7Pigments

STATION	Gives the station identification, for example, Dm 3/149/61 signifies the 149th station worked from <u>Diamantina</u> in 1961, on her third cruise for that year
DATE	Given as day/month/year
TIME	Given in Zone Time (Table 7, p86)
LATITUDE	Given in degrees and minutes
LONGITUDE	
DEPTH	Actual sampling depth, given in metres
CHLOROPHYLL	A and B given in mg/m^3
A B C	C given in MSPU/m^3
ASTACIN	Given in MSPU/m^3
NON-ASTACIN	

*** Indicates no data available

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 3/149/61	24/ 7/61	0800 H	26	32 S	112	33 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.13	0.07	0.63	0.08	0.00	
25	0.10	0.06	0.41	0.06	0.02	
50	0.11	0.07	0.58	0.07	0.00	
75	0.07	0.06	0.37	0.06	0.00	
100	0.07	0.06	0.36	0.06	0.00	
150	0.06	0.09	0.68	0.07	0.00	

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 3/151/61	25/ 7/61	0800 H	21	56 S	115	50 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.22	0.13	0.71	0.10	0.03	
25	0.18	0.07	0.54	0.06	0.01	
50	0.21	0.08	0.29	0.05	0.02	
75	0.15	0.10	0.51	0.07	0.02	
100	0.16	0.08	0.54	0.09	0.02	

STATION	DATE	TIME	LATITUDE		LONGITUDE
DM 3/157/61	28/ 7/61	0800 H	13	27 S	114 58 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.16	0.09	0.48	0.06	0.01
25	0.16	0.08	0.53	0.06	0.01
50	0.19	0.10	0.40	0.06	0.02
75	0.17	0.14	0.46	0.11	0.00
100	0.08	0.04	0.26	0.06	0.01
150	0.07	0.06	0.23	0.04	0.02

STATION	DATE	TIME	LATITUDE		LONGITUDE
DM 3/158/61	28/ 7/61	1600 H	12	18 S	114 33 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.28	0.09	0.57	0.06	0.05
25	0.25	0.06	0.49	0.05	0.05
50	0.26	0.14	0.60	0.09	0.03
75	0.29	0.11	0.84	0.12	0.01
100	0.24	0.09	0.52	0.06	0.04
150	0.11	0.09	0.60	0.08	- 0.01

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 3/159/61	29/ 7/61	0800 H	09	29 S	113	08 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.31	0.07	0.61	0.06	0.04	
25	0.67	0.07	0.85	0.11	0.03	
50	0.44	0.01	0.73	0.07	0.02	
75	0.31	0.06	0.56	0.07	0.01	
100	0.13	0.07	0.30	0.07	0.00	
150	0.09	0.05	0.19	0.05	0.00	

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 3/159/61	29/ 7/61	0800 H	09	29 S	113	08 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.56	0.11	0.66	0.06	0.07	
25	0.99	0.15	1.00	0.09	0.16	
50	0.17	0.05	0.37	0.06	0.00	
75	0.11	0.04	0.29	0.05	- 0.01	
100	0.10	0.05	0.33	0.06	- 0.02	
150	0.11	0.04	0.30	0.04	0.00	
200	0.09	0.06	0.38	0.03	0.00	
300	0.10	0.05	0.33	0.06	0.00	
400	0.18	0.05	0.41	0.05	0.01	
500	0.09	0.06	0.37	0.06	- 0.02	

STATION
DM 3/160/61

DATE
31/ 7/61

TIME
0800 H

LATITUDE
09 58 S

LONGITUDE
115 16 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.35	0.07	0.47	0.05	0.05
25	0.39	0.06	0.45	0.03	0.11
50	1.09	0.15	1.28	0.14	0.13
75	0.25	0.08	0.45	0.04	0.05
100	0.12	0.03	0.28	0.07	0.00
150	0.08	0.05	0.33	0.04	0.00
200	0.07	0.04	0.29	0.04	0.00
300	0.13	0.04	0.30	0.04	0.00
400	0.05	0.03	0.21	0.03	0.01

STATION
DM 3/161/61

DATE
31/ 7/61

TIME
2000 H

LATITUDE
10 23 S

LONGITUDE
116 47 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.12	0.09	0.27	0.04	0.00
25	0.19	0.08	0.60	0.08	0.00
50	0.17	0.09	0.43	0.07	0.01
75	0.19	0.07	0.55	0.04	0.05
100	0.11	0.05	0.50	0.06	0.00
150	0.05	0.04	0.26	0.09	- 0.03
200	0.12	0.04	0.33	0.06	0.00
300	0.07	0.05	0.19	0.03	0.00

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 3/162/61	1/ 8/61	0800 H	10	39 S	118	47 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.29	0.05	0.34	0.04	0.06	
25	0.52	0.11	0.45	0.07	0.07	
50	0.75	0.09	0.75	0.06	0.17	
75	0.16	0.07	0.50	0.07	0.00	
100	0.05	0.01	0.11	0.02	0.01	
150	0.09	0.05	0.36	0.07	0.00	
200	0.08	0.05	0.35	0.08	-	
300	0.10	0.06	0.42	0.08	-	
500	0.08	0.05	0.31	0.06	0.01	

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 3/163/61	1/ 8/61	2000 H	11	09 S	120	36 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.14	0.06	0.45	0.07	0.00	
25	0.28	0.03	0.37	0.04	0.05	
50	0.31	0.12	0.74	0.09	0.01	
75	0.31	0.08	0.50	0.03	0.07	
100	0.11	0.06	0.39	0.05	0.00	
150	0.08	0.05	0.32	0.04	-	
300	0.06	0.03	0.23	0.05	0.00	
400	0.07	0.04	0.26	0.05	0.01	
500	0.11	0.10	0.49	0.06	-	

STATION
DM 3/164/61

DATE
2/ 8/61

TIME
0800 H

LATITUDE
11 40 S

LONGITUDE
122 27 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.14	0.03	0.40	0.04	0.01
25	0.18	0.07	0.36	0.06	0.01
50	0.18	0.04	0.35	0.05	0.02
75	0.33	0.07	0.64	0.05	0.08
100	0.09	0.03	0.21	0.03	0.01
150	0.07	0.04	0.29	0.04	0.00
200	0.06	0.05	0.30	0.03	0.00
400	0.09	0.08	0.48	0.07	0.00
500	0.04	0.01	0.23	0.03	0.02

STATION
DM 3/165/61

DATE
2/ 8/61

TIME
2000 H

LATITUDE
12 53 S

LONGITUDE
123 14 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.22	0.06	0.33	0.04	0.05
25	0.28	0.08	0.33	0.03	0.06
50	0.30	0.10	0.43	0.04	0.05
75	0.21	0.09	0.18	0.04	0.03
100	0.12	0.08	0.35	0.06	0.00
150	0.06	0.05	0.33	0.05	0.00
200	0.06	0.06	0.23	0.04	0.00
300	0.10	0.09	0.54	0.05	0.00

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 5/166/61	3/ 8/61	0800 I	14	43 S	123	49 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.61	0.11	0.77	0.10	0.06	
25	0.55	0.08	0.71	0.08	0.06	
50	0.43	0.08	0.46	0.07	0.06	

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 3/167/61	3/ 8/61	2000 H	13	05 S	125	27 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.27	0.05	0.49	0.07	0.01	
25	0.35	0.07	0.64	0.08	0.01	
50	0.58	0.08	0.51	0.05	0.12	

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 5/168/61	4/ 8/61	0800 I	12 42 S	127 23 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN
0	0.20	0.07	0.51	0.05
25	0.21	0.08	0.56	0.06
50	0.21	0.07	0.26	0.04
				NON-ASTACIN
				0.02
				0.00
				0.02

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 5/169/61	4/ 8/61	1600 I	12 27 S	128 49 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN
0	0.32	0.04	0.46	0.06
25	0.29	0.06	0.53	0.05
50	0.31	0.03	0.39	0.04
75	0.41	0.04	0.51	0.04
				NON-ASTACIN
				0.04
				0.05
				0.07
				0.11

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/170/61	9/ 8/61	0830 H	12 31 S	127 14 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN
0	0.16	0.06	0.60	0.00
25	0.40	0.09	0.64	0.07
50	0.28	0.07	0.58	0.07
60	0.18	0.08	0.45	0.00
				NON-ASTACIN

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/171/61	9/ 8/61	2030 H	12 35 S	124 53 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN
0	0.08	0.05	0.35	0.02
25	0.11	0.05	0.34	0.01
50	0.19	0.09	0.47	0.03
75	0.14	0.10	0.48	0.04
				NON-ASTACIN

STATION	DATE	TIME	LATITUDE	LONGITUDE	
DM 3/172/61	13/ 8/61	2030 H	12 33 S	122 32 E	
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.08	0.02	0.33	0.05	0.00
25	0.08	0.04	0.42	0.04	0.02
50	0.10	0.07	0.32	0.04	0.03
75	0.16	0.07	0.50	0.06	0.01
100	0.08	0.05	0.35	0.05	0.02
150	0.06	0.07	0.29	0.05	0.00

STATION	DATE	TIME	LATITUDE	LONGITUDE	
DM 3/173/61	14/ 8/61	1130 H	13 44 S	119 56 E	
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.06	0.01	0.27	0.02	0.02
25	0.12	0.04	0.30	0.03	0.02
50	0.14	0.09	0.26	0.06	0.01
75	0.12	0.03	0.27	0.03	0.02
100	0.10	0.04	0.27	0.03	0.02
150	0.06	0.03	0.34	0.05	0.00
200	0.06	0.04	0.40	0.05	0.00
300	0.05	0.03	0.36	0.05	- 0.01

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 3/174/61	15/ 7/61	0830 H	15	20 S	120	45 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.06	0.06	0.23	0.02	0.03	
25	0.05	0.01	0.10	0.01	0.02	
50	0.07	0.07	0.23	0.05	0.01	
75	0.13	0.03	0.25	0.04	0.01	
100	0.10	0.03	0.36	0.04	0.01	
150	0.05	0.04	0.25	0.03	0.01	
200	0.06	0.05	0.31	0.03	0.00	
300	0.06	0.05	0.31	0.05	- 0.01	

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 3/175/61	15/ 8/61	2015 H	16	44 S	121	04 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.08	0.05	0.32	0.04	0.00	
25	0.10	0.04	0.28	0.03	0.03	
50	0.16	0.06	0.60	0.06	0.00	
75	0.15	0.09	0.23	0.04	0.02	

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/178/61	19/ 8/61	0815 H	18 59 S	118 17 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.20	0.09	0.49	0.06	0.02
25	0.18	0.05	0.42	0.04	0.03
50	0.23	0.10	0.45	0.06	0.02
75	0.19	0.04	0.52	0.04	0.03
100	0.22	0.06	0.50	0.06	0.01

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STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/179/61	19/ 8/61	2015 H	19 48 S	115 52 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.09	0.04	0.30	0.05	- 0.01
25	0.13	0.04	0.33	0.04	0.03
55	0.20	0.07	0.50	0.04	0.03
75	0.18	0.07	0.54	0.06	0.00
100	0.23	0.09	0.49	0.07	0.01

STATION DATE TIME LATITUDE LONGITUDE
DM 3/180/61 20/ 8/61 0830 H 17 44 S 114 29 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.06	0.04	0.24	0.04	0.00
25	0.07	0.04	0.40	0.02	0.01
50	0.11	0.05	0.34	0.04	0.01
75	0.13	0.04	0.34	0.05	0.00
100	0.15	0.09	0.47	0.04	0.02
150	0.06	0.05	0.30	0.05	0.00
200	0.06	0.06	0.23	0.04	0.00
300	0.06	0.05	0.31	0.05	0.00
400	0.07	0.03	0.39	0.04	0.01
500	0.04	0.02	0.11	0.02	0.01

STATION DATE TIME LATITUDE LONGITUDE
DM 3/181/61 20/ 8/61 1715 H 16 25 S 113 56 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.06	0.05	0.30	0.04	- 0.01
25	0.07	0.04	0.29	0.05	0.00
50	0.07	0.03	0.22	0.03	0.00
75	0.08	0.05	0.31	0.04	0.01
100	0.16	0.10	0.65	0.05	0.02
150	0.06	0.05	0.31	0.03	0.00
200	0.11	0.04	0.60	0.08	- 0.02
300	0.05	0.05	0.15	0.03	0.00

STATION DATE TIME LATITUDE LONGITUDE
DM 3/183/61 21/ 8/61 1030 G 15 05 S 111 26 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.06	0.05	0.32	0.02	0.01
25	0.03	0.02	0.15	0.01	0.01
50	0.06	0.05	0.31	0.02	0.01
75	0.06	0.05	0.32	0.02	0.02
100	0.08	0.05	0.34	0.05	0.00
150	0.11	0.04	0.63	0.06	- 0.01
200	0.06	0.05	0.31	0.05	0.00
300	0.04	0.05	0.31	0.04	0.00
400	0.06	0.05	0.31	0.05	0.01
500	0.06	0.05	0.31	0.05	0.02

STATION DATE TIME LATITUDE LONGITUDE
DM 3/184/61 21/ 8/61 2030 G 15 03 S 110 00 E

DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.17	0.08	0.55	0.05	0.04
25	0.13	0.04	0.32	0.04	0.01
50	0.19	0.09	0.64	0.07	0.00
75	0.23	0.08	0.59	0.06	0.03
100	0.13	0.09	0.61	0.07	0.00
150	0.06	0.05	0.33	0.05	0.00
200	0.05	0.04	0.24	0.03	0.01
300	0.06	0.04	0.50	0.05	- 0.01
400	0.07	0.05	0.50	0.05	0.01
500	0.02	0.02	0.12	0.01	0.05

STATION DATE TIME LATITUDE LONGITUDE
DM 3/185/61 22/ 8/61 0830 G 17 15 S 110 00 E

DEPTH CHLOROPHYLL A CHLOROPHYLL B CHLOROPHYLL C ASTACIN NON-ASTACIN

0	0.06	0.05	0.31	0.02	0.02
25	0.06	0.05	0.31	0.04	-
50	0.07	0.06	0.37	0.03	0.01
75	0.05	0.04	0.24	0.02	0.01
100	0.11	0.06	0.40	0.04	0.01
150	0.05	0.04	0.25	0.02	0.03
200	0.06	0.05	0.49	0.04	0.00
300	0.05	0.03	0.34	0.03	0.00
400	0.06	0.05	0.31	0.03	0.00
500	0.03	0.03	0.37	0.05	0.00

STATION DATE TIME LATITUDE LONGITUDE
DM 3/186/61 22/ 8/61 2030 G 19 22 S 109 54 E

DEPTH CHLOROPHYLL A CHLOROPHYLL B CHLOROPHYLL C ASTACIN NON-ASTACIN

0	0.06	0.04	0.42	0.05	-
25	0.05	0.04	0.25	0.02	0.01
50	0.17	0.08	0.55	0.06	0.02
75	0.12	0.08	0.54	0.05	0.00
100	0.13	0.09	0.45	0.06	0.01
150	0.06	0.02	0.32	0.02	0.01
200	0.06	0.02	0.32	0.03	0.00
300	0.05	0.03	0.35	0.03	0.00

STATION	DATE	TIME	LATITUDE	LONGITUDE	
DM 3/187/61	23/ 8/61	0830 G	21 36 S	110 00 E	
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.06	0.05	0.31	0.09	- 0.01
25	0.06	0.05	0.29	0.05	0.00
50	0.07	0.05	0.31	0.04	0.00
75	0.14	0.09	0.47	0.08	0.00
100	0.11	0.08	0.51	0.04	0.01
150	0.06	0.05	0.31	0.05	- 0.01
200	0.06	0.05	0.29	0.05	0.00
300	0.10	0.09	0.72	0.08	- 0.04
400	0.06	0.05	0.31	0.04	0.00
500	0.05	0.04	0.24	0.01	0.02

STATION	DATE	TIME	LATITUDE	LONGITUDE	
DM 3/188/61	23/ 8/61	2030 G	23 11 S	109 59 E	
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN
0	0.07	0.06	0.37	0.06	- 0.01
25	0.09	0.04	0.29	0.05	0.00
50	0.11	0.05	0.34	0.05	0.00
75	0.19	0.09	0.46	0.06	0.02
100	0.12	0.06	0.39	0.05	0.02
150	0.11	0.07	0.49	0.06	- 0.01
200	0.09	0.10	0.63	0.06	0.00
300	0.02	0.02	0.12	0.02	0.01

LONGITUDE

LATITUDE

TIME

DATE

STATION

110 01 E

24/ 8/61

0815 G

DM 3/189/61

NON-ASTACIN

C

B

CHLOROPHYLL A

DEPTH

0.00
0.00
0.00
0.00
0.00
0.02
0.01
0.01
0.01
0.00
0.01

ASTACIN

0.28
0.57
0.46
0.59
0.33
0.29
0.57
0.28
0.49
0.32

CHLOROPHYLL B

0.04
0.09
0.05
0.09
0.05
0.04
0.09
0.07
0.05
0.05

CHLOROPHYLL A

0.07
0.11
0.07
0.13
0.11
0.07
0.11
0.06
0.06
0.06

LONGITUDE

LATITUDE

TIME

DATE

STATION

109 59 E

24/ 8/61

2015 G

DM 3/190/61

NON-ASTACIN

C

B

CHLOROPHYLL A

DEPTH

0.00
0.00
0.01
0.03
0.00
0.01
0.00
0.00

ASTACIN

0.31
0.31
0.27
0.43
0.36
0.29
0.24
0.02

CHLOROPHYLL B

0.05
0.04
0.07
0.09
0.06
0.05
0.04
0.03

CHLOROPHYLL A

0.06
0.10
0.07
0.12
0.07
0.06
0.05
0.02

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 3/191/61	25/ 8/61	0830 G	29	21 S	110	04 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.11	0.05	0.53	0.07	-	0.02
25	0.11	0.07	0.48	0.08	-	0.02
50	0.07	0.04	0.28	0.05		0.00
75	0.11	0.07	0.31	0.05		0.02
100	0.12	0.05	0.50	0.07	-	0.01
150	0.11	0.06	0.40	0.07	-	0.03
200	0.06	0.05	0.31	0.06	-	0.02
300	0.06	0.05	0.30	0.07	-	0.03
400	0.07	0.02	0.59	0.05		0.00
500	0.10	0.07	0.47	0.11	-	0.05

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 3/192/61	25/ 3/61	2030 G	31	00 S	110	05 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.07	0.04	0.29	0.03		0.00
25	0.11	0.11	0.55	0.06		0.00
50	0.16	0.10	0.66	0.07		0.00
75	0.23	0.13	0.89	0.09		0.00
100	0.24	0.13	0.76	0.09		0.02
150	0.17	0.13	0.81	0.08		0.00
200	0.10	0.08	0.51	0.11	-	0.03
300	0.10	0.09	0.43	0.07	-	0.01

STATION	DATE	TIME	LATITUDE		LONGITUDE	
DM 3/193/61	26/ 8/61	1030 G	32	02 S	111	45 E
DEPTH	CHLOROPHYLL A	CHLOROPHYLL B	CHLOROPHYLL C	ASTACIN	NON-ASTACIN	
0	0.17	0.09	0.47	0.04	0.01	
25	0.19	0.06	0.38	0.05	0.00	
50	0.17	0.08	0.57	0.08	-	
75	0.19	0.08	0.55	0.07	0.00	
100	0.16	0.08	0.41	0.04	0.00	
150	0.20	0.12	0.51	0.08	-	
200	0.24	0.09	0.53	0.07	0.00	
300	0.07	0.06	0.37	0.04	0.00	
400	0.09	0.04	0.28	0.04	0.01	
500	0.07	0.06	0.37	0.06	0.00	

DATA

PART 8

PHYTOPLANKTON

EXPLANATION OF HEADINGSPart 8Phytoplankton

STATION	Gives the station identification, for example, Dm 3/157/61 signifies the 157th station worked from <u>Diamantina</u> in 1961, on her third cruise for that year
DATE	Given as day/month/year
TIME	Given in Zone Time (Table 7, p86)
LATITUDE LONGITUDE	Given in degrees and minutes
DEPTH	Given in metres
WITH & WITHOUT CHLOROPHYLL and TOTAL PARTICLES	The counts of organisms with and without chlorophyll, and total particles are expressed as log numbers per litre
00.00	Indicates that the counts were zero
***	Indicates no data available

STATION DATE TIME LATITUDE LONGITUDE
DM 3/157/61 28/ 7/61 0800 H 13 27 S 114 58 E

DEPTH	WITH CHLOROPHYLL	WITHOUT CHLOROPHYLL	TOTAL PARTICLES
0	05.10	05.74	06.34
25	05.18	05.63	05.98
50	05.10	05.88	06.25
75	05.00	05.51	06.21
100	04.70	04.70	06.68
150	00.00	06.11	06.38

STATION DATE TIME LATITUDE LONGITUDE
DM 3/158/61 28/ 7/61 1600 H 12 18 S 114 33 E

DEPTH	WITH CHLOROPHYLL	WITHOUT CHLOROPHYLL	TOTAL PARTICLES
0	00.00	05.18	06.69
25	00.00	04.70	06.74
50	05.54	05.95	06.77
75	04.88	05.81	06.51
100	05.30	05.98	06.77
150	04.70	05.44	06.88
300	00.00	00.00	06.71

STATION
DM 3/159/61

DATE
30/ 7/61

TIME
1400 H

LATITUDE
09 29 S

LONGITUDE
113 08 E

DEPTH	WITH CHLOROPHYLL	WITHOUT CHLOROPHYLL	TOTAL PARTICLES
0	05.24	05.98	06.27
25	04.88	05.60	06.54
50	04.40	04.70	06.17
75	05.18	06.10	06.25
100	00.00	04.70	06.19
150	04.70	05.24	06.46
300	00.00	04.40	06.22

206.

STATION
DM 3/159/6

DATE
30/ 7/61

TIME
1400 H

LATITUDE
09 29 S

LONGITUDE
113 08 E

DEPTH	WITH CHLOROPHYLL	WITHOUT CHLOROPHYLL	TOTAL PARTICLES
0	05.40	06.11	06.69
25	05.48	**	06.02
50	05.10	05.86	06.10
75	05.00	05.85	06.14
100	04.40	05.24	06.50
150	04.40	04.88	06.44
300	00.00	00.00	06.58

STATION DATE TIME LATITUDE LONGITUDE
DM 3/160/61 31/ 7/61 0800 H 09 58 S 115 16 E

DEPTH	WITH CHLOROPHYLL	WITHOUT CHLOROPHYLL	TOTAL PARTICLES
0	05.24	05.63	06.46
25	05.74	06.39	06.47
50	06.14	06.39	06.78
75	05.60	05.76	06.34
100	05.24	05.63	06.75
150	00.00	00.00	06.79
300	00.00	00.00	06.92

STATION DATE TIME LATITUDE LONGITUDE
DM 3/162/61 1/ 8/61 0800 H 10 39 S 118 47 E

DEPTH	WITH CHLOROPHYLL	WITHOUT CHLOROPHYLL	TOTAL PARTICLES
0	05.30	05.70	06.43
25	05.83	05.72	06.67
50	05.85	06.00	06.38
75	05.00	05.60	06.11
100	00.00	00.00	06.08
150	00.00	05.35	06.57
300	00.00	04.70	06.26

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/104/61	2/ 8/61	0800 H	11 40 S	122 27 E
DEPTH	WITH CHLOROPHYLL	WITHOUT CHLOROPHYLL	TOTAL PARTICLES	
0	00.00	04.70	06.29	
25	04.70	05.44	06.05	
50	04.70	05.51	06.05	
75	05.30	06.53	06.76	
100	04.70	05.35	06.16	
150	04.40	04.40	06.79	
300	00.00	00.00	06.85	

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/166/61	3/ 8/61	0800 H	14 43 S	123 49 E
DEPTH	WITH CHLOROPHYLL	WITHOUT CHLOROPHYLL	TOTAL PARTICLES	
0	04.40	05.48	06.71	
25	05.93	06.60	06.86	
50	00.00	05.57	06.73	

STATION DATE TIME LATITUDE LONGITUDE
DM 3/168/61 4/ 8/61 0800 H 12 42 S 127 23 E

DEPTH	WITH CHLOROPHYLL	WITHOUT CHLOROPHYLL	TOTAL PARTICLES
0	04.70	06.44	06.75
25	04.40	06.01	06.62
50	04.70	06.15	06.56

STATION DATE TIME LATITUDE LONGITUDE
DM 3/169/61 4/ 8/61 1600 I 12 27 S 128 49 E

DEPTH	WITH CHLOROPHYLL	WITHOUT CHLOROPHYLL	TOTAL PARTICLES
0	05.65	06.43	06.87
50	05.54	06.68	06.81
25	04.88	06.27	***
75	05.54	06.53	06.83

STATION	DATE	TIME	LATITUDE	LONGITUDE
DM 3/170/61	9/ 8/61	0800 I	12 31 S	127 14 E

DEPTH	WITH CHLOROPHYLL	WITHOUT CHLOROPHYLL	TOTAL PARTICLES
0	04.70	05.93	06.52
25	05.00	06.15	06.57
50	00.00	05.10	06.43
60	00.00	04.40	06.86

TABLE 8

OCCURRENCE OF DINOFLAGELLATES

Numbers refer to stations at which organism was found

Amphisolenia bidentata 158, 160, 164, 169.

Ceratium azoricum 164.

C. buceros 157, 162, 168, 169.

C. candelabrum 157, 164.

C. contortum 157.

C. declinatum 158.

C. dens 159, 168.

C. euarquatum 164, 169.

C. extensum 157.

C. furca 157, 158, 159, 162, 164, 168, 169.

C. fusus 164, 168, 169.

C. gibberum 162, 168, 169.

C. hexacanthum 160.

C. horridum 158.

C. inflexum 168, 169.

C. massiliense 168.

C. paradoxides 158.

C. pentagonum 157, 164, 168.

C. pulchellum 157, 159, 162, 169.

C. schmidtii 169.

C. symmetricum 157, 160, 162.

C. trichoceros 157, 160, 162, 164, 169.

C. tripos 157, 159, 162, 164.

C. vultur 158, 162.

Ceratocorys horrida 162.

Dinophysis recurva 164.

D. schuetlii 157.

Dinothrix caudata 157.

Goniaulax glyptorhynchus 164.

G. kofoidi 162, 164.

G. polygramma 157.

G. spinifera 159.

Goniiodoma polyedricum 157.

Histioneis mitchellana 157.

Melanodinium nigricans 169.

Ornithocercus magnificus 157, 159, 164, 169, 170.

O. thurni 157, 164.

Oxytoxum compressum 162.

O. curvatum 157.

O. longiceps 158.

O. scolopax 157, 158, 159, 164.

Peridinium conicum 169.

P. crassipes 160

P. curtipes 157, 158, 159, 160, 162, 164, 169.

P. elegans 157, 162, 169.

P. globulus 159, 168.

P. grande 169.

P. humile 159.

P. longipes 162.

P. obliquum 159.

P. oceanicum 160.

P. pendulum 162.

P. pentagonum 162.

P. tenuissimum 157, 159, 162.

P. tuba 158.

Phalacroma cuneus 158, 164.

P. doryphorum 164, 168.

P. porodictyum 157.

P. rapa 162.

Podolampas bipes 159, 164, 168, 169.

P. palmipes 158, 159, 162, 170.

P. spinifer 157, 164, 170.

P. elegans 157, 159, 160, 164.

Prorocentrum schilleri 168.

Pyrocystis robusta 169.

Pyrohistoneis rotundata 157.

Pyrophacus horologicum 159, 170.

TABLE 9

OCCURRENCE OF DIATOMS

Numbers refer to stations at which organism was found

Actinodiscus arachne 162.

A. maculatus 162.

Amphipora gigantea 168.

Amphora hendeyi 157.

Asteromphalus affinis 158, 159, 160, 162, 164, 166.

A. heptactis 157, 162, 169.

A. hookeri 157.

Bacteriastrum comosum 158, 164, 166, 170.

B. varians 160, 162.

Bellerochea malleus 162.

Biddulphia cylindrata 166.

B. mobiliensis 159, 160, 162, 166, 168, 169.

Campylodiscus echeneis 160.

Chaetoceros affine 158.

C. atlanticum 157, 159, 160, 162, 164, 166.

C. brevis 159.

C. coarctatum 162, 166.

C. criophilum 158, 164.

C. dadayi 158, 160, 162, 168, 169.

C. debile 158, 160, 162, 168, 169.

C. eibenii 158, 159, 160, 162, 166.

C. laeve 159, 166.

C. lorenzianum 159.

C. messanense 158, 159, 160, 162, 164.

214.

Chaetoceros pendulum 157, 158, 159, 160, 162, 164.

C. peruvianum 160.

C. vanheurckii 158, 159, 164, 166, 169.

Climacodium frauenfeldianum 157, 158, 159, 160, 168, 169, 170.

Corethron criophilum 166.

Coscinodiscus asteromphalus 166.

C. concinnus 166.

C. curvatulus 166, 168.

C. debilis 166.

C. excentricus 158.

C. janischii 160, 162, 166.

C. lineatus 157.

C. marginatus 159, 160, 169.

C. oculus iridis 157, 158, 159, 164, 166, 168, 169.

C. perforatus 162, 164.

C. sublineatus 162.

Cyclotella striata 166.

Dactyliosolen mediterraneus 169.

Ditylum brightwellii 159, 166, 169.

Eucampia zoodiacus 160, 166.

Fragilaria oceanica 162.

Guinardia flaccida 170.

Hemiaulus hauckii 162, 166, 168, 169.

H. sinensis 166, 169.

Hemidiscus cuneiformis 157, 158, 170.

H. hardmanianus 162.

Hyalodiscus stelliger 162.

Leptocylindrus danicus 157, 159, 160, 164, 169.

Mastogloia quinquecostata 157.

Melosira nummuloides 160.

Navicula crucigera 158.

N. cuspidata 157.

N. elegans 158, 159, 160, 162, 164, 166, 168, 169.

N. sectilis 158, 164, 166.

N. weissflogii 170.

Nitzschia closterium 170.

N. seriata 159, 166.

Planktoniella sol 157, 158, 159, 160, 162, 164, 166, 169, 170.

Pleurosigma angulatum 162.

P. capense 157.

P. tenuissimum 166, 168.

Pseudoeunotia doliolus 157, 158, 160, 162.

Rhizosolenia alata 157, 158, 159, 160, 162, 164, 166, 168,
169.

R. robusta 159, 162, 166.

R. stouterforthii 158, 159, 160, 162, 166, 169.

R. styliformis 158, 162, 166.

Skeletonema costatum 159, 169.

Stephanopyxis palmerana 159, 162, 166, 169, 170.

Streptotheca thamesis 169.

Synedra hennedyana 158.

Thalassiosira decipiens 158.

T. gravida 159.

Thalassiothrix fraunfeldii 158, 159, 160, 162.

T. nitzschoides 157, 159, 160, 162, 164, 166, 168.

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