

# OCEANOGRAPHICAL STATION LIST

VOLUME 87

COASTAL INVESTIGATIONS OFF PORT JACKSON AND  
WOLLONGONG, NEW SOUTH WALES, IN 1966

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

OCEANOGRAPHICAL STATION LIST

VOLUME 87

COASTAL INVESTIGATIONS OFF PORT JACKSON  
AND WOLLONGONG, NEW SOUTH WALES, IN 1966

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION

AUSTRALIA

MELBOURNE, - 1968

## CONTENTS

	Page
I. INTRODUCTION	3
II. METHODS OF COLLECTION AND ANALYSIS OF SAMPLES	3
1. Physics	3
2. Chemistry	3
REFERENCES	5
III. DATA	
Part 1 Hydrology - Port Jackson Stations	9
Part 2 Hydrology - Wollongong Stations	29

When citing this station list, abbreviate as follows:  
CSIRO Aust. Oceanogr. Stn List 87.

# OCEANOGRAPHICAL STATION LIST

## VOLUME 87

Coastal Investigations off Port Jackson  
and Wollongong, New South Wales, in 1966

### I. INTRODUCTION

This report records the data collected during coastal cruises of M.V. Saga off Port Jackson and Wollongong in 1966.

### II. METHODS OF COLLECTION AND ANALYSIS OF SAMPLES

#### 1. Physics

Temperature.—Water temperatures were taken with deep-sea reversing thermometers and readings were corrected for thermal expansion.

Thermometric Depth.—For Port Jackson stations worked during the second half of the year, depth calculations were made by the method described by Pollak (1950). No depth corrections have been made to the wire sampling depths unless differences exceeded 10 m at 100 m.

Sigma-t.—Sigma-t values were computed from temperature and chlorinity values using the equations of Knudsen (La Fond 1951) except for Port Jackson stations worked during the second half of the year, when sigma-t values were computed using the tables of sigma-t given by the U.S. Navy Hydrographic Office (1955).

#### 2. Chemistry

Chlorinity.—A chlorinity-temperature meter of the conductivity type (Hamon 1956) was used to measure chlorinity.

Salinity.—Salinity was measured with an inductive salinometer (Brown and Hamon 1961).

Dissolved Oxygen.—A version of the standard Winkler method was used to determine the amount of dissolved oxygen in the seawater samples. The version used is a modification of that described by Thompson and Robinson (1939) and differs in some respects from the revision by Jacobsen, Robinson, and Thompson (1950). Potassium iodate was used as the iodometric standard, and the reagents necessary to fix the oxygen in solution were used at different concentrations (Rochford 1963). Duplicate titrations were made on approximately every tenth sample.

Saturation values were computed using the simpler of the equations given by Richards and Corwin (1956) -

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

**Inorganic Phosphate.**—The method of Atkins (1923) was used with 1 ml molybdate reagent (300 ml 10% w/v ammonium molybdate and 100 ml 50% v/v sulphuric acid) and 0.1 ml 1% w/v stannous chloride diluted afresh from a 40% stock solution in hydrochloric acid, which was kept under paraffin. The reagents were dispensed automatically by a piston dispenser.

Standard phosphate solutions were made up in distilled water. At air temperatures less than 25°C, analyses were carried out in batches of 10; readings were begun within 10 min of adding reagents, and completed within 10 min. At air temperatures greater than 25°C, batches of 6 were analysed; readings were commenced within 5 min of adding reagents, and completed within 7 min. Each batch was compared with a distilled water blank and a 0.65 µg-atom/l standard in a Hilger Spekker absorptiometer using 4 cm cells and Ilford 608 filters. Each day a complete calibration was made using standards up to 3.25 µg-atom/l. Results are given as µg-atom/l with no correction for salt error and are precise to ±10% for values less than 0.5 µg-atom/l, and ±5% for higher values. To correct for salt effects, the results given should be multiplied by 1.15.

**Total Phosphorus.**—100 ml samples were drawn from the Nansen bottles into 150 ml Pyrex conical flasks, 0.2 ml of 72% v/v perchloric acid was added and digestion at 200°-250°C carried out immediately on a sand tray. After evaporation of water, heating was continued until fuming of the salt residue commenced. The samples were then allowed to cool and 100 ml of distilled water and 2 drops of 2% w/v phenolphthalein were added. If alkaline, perchloric acid was added until a slight acidity persisted. The flasks were allowed to stand for about 24 hr to allow the salts to dissolve. Phosphate was then determined as described above for inorganic phosphate. Results are given as µg-atom/l, with no correction for salt error. To correct for salt effects the results given should be multiplied by 1.15.

**Nitrate.**—After collection, water samples were stored in plastic bottles and preserved with 2 drops of saturated HgCl<sub>2</sub>. Nitrate was determined at Cronulla by the strychnidine method (Rochford 1947). The reagent was prepared by adding 0.64 g of strychnidine to a litre of nitrate-free sulphuric acid. Five ml of this reagent were added, 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 hr. The solutions were read in a Unicam SP 600 spectrophotometer at a wavelength of 530 m $\mu$  using a 5 mm cell. Samples with an absorbance greater than the standard corresponding to 14.4  $\mu$ g-atom/l were diluted with artificial sea-water/sulphuric acid mixture before reading. Results are given in  $\mu$ g-atom/l.

#### REFERENCES

- ATKINS, W.R.G. (1923).—The phosphate content of fresh and salt waters and its relation to the growth of algal plankton. J. mar. biol. Ass. U.K. 13, 119-50.
- BROWN, N.L., and HAMON, B.V. (1961).—An inductive salinometer. Deep-Sea Res. 3, 65-75.
- HAMON, B.V. (1956).—A portable temperature-chlorinity bridge for estuarine investigations and seawater analysis. J. scient. Instrum. 33, 329-33.
- JACOBSEN, J.P., ROBINSON, R.J., and THOMPSON, T.G. (1950).—A review of the determination of dissolved oxygen in seawater by the Winkler method. Publs scient. Ass. Oceanogr. phys. 11.
- LA FOND, E.C. (1951).—Processing oceanographic data. U.S. Navy Hydrogr. Off. Publ. No. 614.
- POLLAK, M.J. (1950).—Notes on determining the depths of sampling in serial oceanographic observations. J. mar. Res. 9, 17-20.
- RICHARDS, F.A., and CORWIN, N. (1956).—Some oceanographic applications of the solubility of oxygen in sea-water. Limnol. Oceanogr. 1, 263-7.
- ROCHFORD, D.J. (1947).—The preparation and use of Harvey's reduced strychnine reagent in oceanographical chemistry. Bull. Coun. scient. ind. Res., Melb. No. 220.
- ROCHFORD, D.J. (1963).—SCOR-UNESCO chemical intercalibration tests; results of 2nd series, R.S. Vityaz, August 2-9, 1962, Australia. (Mimeogr.) (CSIRO : Cronulla.)

THOMPSON, T.G., and ROBINSON, R.J. (1939).—Notes on the determination of dissolved oxygen in seawater. J. mar. Res. 2, 1-8.

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

### III. DATA

The data were processed in a C.D.C. 3600 Computer.

#### EXPLANATION OF HEADINGS

##### Parts 1 and 2

##### Hydrology

STATION or STATION  
PT JACKSON 1966 PJ-0/-0/66

Stations worked off Port Jackson  
in 1966

STATION  
WOLLONGONG

Stations worked off Wollongong

DATE

Given as day/month/year

TIME

Given in Zone Time and is the time at the beginning of the first cast. The code letter for the time zone follows the time. Zone Time at all stations was Eastern Australian Standard Time, GMT +10 hr, Code K

LATITUDE LONGITUDE

Given in degrees and minutes

SONIC DEPTH

Given in metres, measured at standard sound velocity of 800 fm (1463 m) per second

WIND  
DIR. SP.

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

SEA  
DIR. AMT.

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

WIRE ANGLES	Wire angles are measured at the surface and expressed in degrees for each cast
CAST1 CAST2 CAST3	
CAST	Gives the cast number
DEPTH	Sampling depth given in metres
TEMP.	Sea temperatures recorded in °C
CHLORINITY	
SALINITY	Given in parts per thousand
SIGMA-T	Sigma-t to 2 decimal places
OXYGEN	Given in ml/l
OXYGEN % SAT.	Oxygen percentage saturation
I.P. or INORG. P	Inorganic phosphorus given in $\mu\text{g-atom/l}$
TOTAL P	Total phosphorus given in $\mu\text{g-atom/l}$
NITRATE	Given in $\mu\text{g-atom/l}$

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



DATA  
PART 1  
HYDROLOGY  
PORT JACKSON STATIONS

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	2 / 2/66		33 53 S	151 46 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.09	19.69	24.64	5.06	102	0.13	***	***	U.1
25	20.11	19.66	25.14	4.93	95	0.19	***	***	U.6
50	18.04	19.65	25.67	3.91	73	0.53	***	***	8.1
75	17.14	19.61	25.83	3.83	70	0.65	***	***	10.3
100	16.28	19.61	26.03	4.14	74	0.61	***	***	9.7
125	15.12	19.54	26.19	3.98	70	0.76	***	***	14.0
150	14.20	19.54	26.39	4.30	74	0.79	***	***	13.7
175	13.36	19.50	26.52	4.58	77	0.77	***	***	14.4
200	12.82	19.47	26.58	4.57	76	0.81	***	***	15.9
225	12.30	19.44	26.64	4.57	75	0.92	***	***	17.5
250	11.94	19.41	26.67	4.54	74	0.94	***	***	18.2
275	11.83	19.40	26.68	4.54	74	0.96	***	***	18.8
300	11.58	19.39	26.71	4.51	73	0.96	***	***	20.3

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	2 / 2/66		33 52 S	151 39 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.12	19.69	24.64	5.10	103	0.17	***	***	U.2
25	21.61	19.69	24.77	5.15	103	0.17	***	***	U.2
50	17.93	19.64	25.67	3.87	72	0.61	***	***	8.5
75	16.94	19.61	25.87	3.84	70	0.68	***	***	10.0
100	16.22	19.59	26.02	4.00	72	0.70	***	***	10.7
125	15.09	19.56	26.23	4.19	73	0.70	***	***	12.2
150	14.13	19.54	26.40	4.28	73	0.81	***	***	13.4
170	12.88	19.47	26.57	4.39	73	0.88	***	***	16.0

STATION	DATE	TIME	LATITUDE	LONGITUDE					
P1 JACKSON 1966	2/ 2/66		33 51 S	151 32 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.16	19.69	24.62	5.07	102	0.34	***	***	0.3
25	21.46	19.68	24.81	5.08	101	0.21	***	***	0.2
50	19.25	19.64	25.34	4.84	92	0.34	***	***	0.8
75	16.62	19.61	25.96	4.02	73	0.68	***	***	8.9
100	15.44	19.59	26.19	4.20	74	0.68	***	***	10.0
125	13.92	19.53	26.44	4.32	74	0.83	***	***	13.5

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	2/ 2/66		33 51 S	151 26 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.09	19.69	24.65	5.03	101	0.19	***	***	0.3
10	21.90	19.69	24.70	5.16	103	0.26	***	***	0.3
20	21.26	19.68	24.86	5.08	101	0.24	***	***	0.1
30	17.95	19.63	25.66	4.05	75	0.62	***	***	4.6
40	16.99	19.62	25.88	4.22	77	***	***	***	***
50	16.25	19.62	26.09	3.97	71	0.73	***	***	8.0
75	13.90	19.53	26.44	4.13	71	0.92	***	***	13.9
100	13.71	19.51	26.46	4.28	73	0.94	***	***	13.4

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	9 / 2 / 66		33 53 S	151 46 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.48	19.75	24.89	5.16	103	0.15	***	***	0.2
25	21.36	19.77	24.96	5.20	103	0.10	***	***	0.1
50	17.86	19.64	25.69	3.84	71	0.52	***	***	3.8
75	16.31	19.63	26.05	4.12	74	0.61	***	***	4.8
100	15.33	19.60	26.23	4.43	78	0.56	***	***	4.6
125	14.67	19.58	26.35	4.59	80	0.61	***	***	4.2
150	14.00	19.54	26.43	4.49	77	0.65	***	***	5.6
175	13.67	19.52	26.48	4.48	76	0.65	***	***	7.7
200	13.43	19.51	26.52	4.53	77	0.65	***	***	6.9
225	13.03	19.49	26.57	4.55	76	0.74	***	***	7.4
250	12.50	19.46	26.63	4.60	76	0.83	***	***	8.1
275	11.68	19.40	26.71	4.54	74	0.91	***	***	9.3
300	11.23	19.37	26.74	4.51	73	0.98	***	***	9.8
STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	9 / 2 / 66		33 52 S	151 39 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.86	19.73	24.77	4.99	100	0.09	***	***	0.4
25	21.31	19.74	24.93	5.01	99	0.11	***	***	0.3
50	17.51	19.63	25.76	3.95	73	0.57	***	***	4.4
75	16.88	19.62	25.90	3.88	70	0.62	***	***	5.9
100	15.72	19.60	26.15	4.02	71	0.63	***	***	6.0
125	15.13	19.58	26.25	4.03	71	0.68	***	***	6.6
150	14.16	19.55	26.41	4.43	76	0.65	***	***	6.6
170	13.90	19.53	26.45	4.37	75	0.79	***	***	7.0

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	9/ 2/66		33 51 S	151 52 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I. P.	PART P	TOTAL P	NITRATE
0	21.95	19.71	24.72	4.93	99	0.13	***	***	0.2
25	21.48	19.72	24.86	4.96	99	0.10	***	***	0.4
50	17.32	19.63	25.81	4.00	73	0.53	***	***	3.6
75	15.88	19.60	26.10	3.99	71	0.68	***	***	6.3
100	14.61	19.56	26.33	3.99	69	0.77	***	***	6.7
125	13.86	19.53	26.45	4.21	72	0.79	***	***	8.2

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	9/ 2/66		33 51 S	151 26 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I. P.	PART P	TOTAL P	NITRATE
0	22.07	19.71	24.68	4.97	100	0.10	***	***	0.2
10	21.76	19.72	24.78	4.90	98	0.10	***	***	0.0
20	21.78	19.72	24.77	4.92	98	0.15	***	***	0.0
30	21.39	19.69	24.85	4.83	96	0.21	***	***	0.1
40	19.06	19.64	25.40	4.42	84	0.35	***	***	1.1
50	17.48	19.62	25.76	4.22	78	0.51	***	***	2.9
75	14.76	19.57	26.31	3.89	68	0.64	***	***	7.2
100	14.16	19.54	26.40	3.99	68	0.83	***	***	8.1

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	9/ 2/66		33 51 S	151 23 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.99	19.70	24.69	4.89	98	0.18	***	***	0.3
10	21.68	19.71	24.78	4.92	98	0.15	***	***	0.1
20	21.80	19.71	24.75	4.93	99	0.10	***	***	0.1
30	21.40	19.70	24.85	4.97	99	***	***	***	***
40	21.32	19.69	24.86	4.96	98	0.20	***	***	0.0
50	18.20	19.64	25.60	4.23	79	0.50	***	***	2.0
75	14.57	19.56	26.34	3.81	66	0.87	***	***	7.4

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	9/ 2/66		33 50 S	151 21 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.87	19.69	24.71	4.92	102	0.14	***	***	0.2
10	21.52	19.70	24.82	4.98	99	0.13	***	***	0.2
20	21.78	19.70	24.75	4.93	99	0.19	***	***	0.1
30	21.37	19.70	24.85	4.96	98	0.17	***	***	0.0
40	21.24	19.69	24.89	4.95	98	0.19	***	***	0.0
50	18.45	19.64	25.55	4.26	80	0.42	***	***	1.9

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	15/ 2/66		33 53 S	151 46 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.64	19.71	24.51	4.93	100	0.21	***	***	0.0
25	20.33	19.67	25.11	4.96	96	0.19	***	***	0.0
50	17.56	19.64	25.76	3.76	69	0.68	***	***	9.4
75	16.49	19.61	25.98	3.86	70	0.78	***	***	10.9
100	15.24	19.58	26.23	4.17	73	0.71	***	***	11.6
125	14.22	19.55	26.41	4.44	76	0.76	***	***	12.3
150	13.71	19.53	26.48	4.59	78	0.79	***	***	12.9
175	13.39	19.51	26.53	4.49	76	0.84	***	***	13.3
200	13.00	19.50	26.58	4.62	77	1.16	***	***	13.9
225	12.77	19.48	26.61	4.65	78	1.01	***	***	14.6
250	12.25	19.44	26.66	4.54	75	0.93	***	***	16.1
275	11.60	19.39	26.71	4.50	73	1.09	***	***	20.5
300	11.05	19.36	26.76	4.45	71	1.13	***	***	22.2

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	15/ 2/66		33 52 S	151 39 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PARTS P	TOTAL P	NITRATE
0	***	19.69	***	4.93	***	0.22	***	***	0.4
25	20.90	19.69	24.97	4.95	97	0.17	***	***	0.2
50	18.02	19.65	25.66	3.79	70	0.61	***	***	8.5
75	16.28	19.62	26.05	4.01	72	0.76	***	***	9.5
100	15.38	19.58	26.19	4.05	71	0.73	***	***	11.4
125	13.85	19.53	26.45	4.26	73	0.78	***	***	13.5
150	13.49	19.52	26.51	4.47	76	0.78	***	***	13.2
170	13.17	19.50	26.55	4.51	76	0.85	***	***	13.5

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	15/ 2/66		33 51 S	151 32 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.41	19.69	24.55	5.00	101	0.25	***	***	0.3
25	21.17	19.69	24.90	5.08	100	0.19	***	***	0.1
50	18.15	19.64	25.62	4.05	75	0.55	***	***	5.6
75	16.38	19.61	26.00	3.79	68	0.75	***	***	10.7
100	14.65	19.56	26.32	3.71	64	0.91	***	***	13.9
125	13.72	19.52	26.47	4.06	69	0.90	***	***	14.9

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	15/ 2/66		33 51 S	151 26 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.25	19.68	24.59.	5.00	101	0.16	***	***	0.4
10	21.69	19.70	24.77	5.09	102	0.13	***	***	0.1
20	21.06	19.69	24.93	5.03	99	0.13	***	***	0.1
30	20.60	19.68	25.04	4.94	97	0.25	***	***	0.2
40	19.09	19.66	25.41	4.30	82	0.34	***	***	1.6
50	17.78	19.63	25.70	4.04	75	0.56	***	***	5.6
75	15.33	19.58	26.21	4.06	71	0.75	***	***	11.7
100	14.24	19.56	26.41	3.81	66	0.96	***	***	15.6



STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	15/ 2/66		33 51 S	151 23 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.57	19.69	24.51	5.00	101	0.18	***	***	0.2
10	21.93	19.70	24.70	5.11	102	0.12	***	***	0.1
20	21.43	19.70	24.84	5.11	101	0.17	***	***	0.2
30	20.19	19.68	25.15	4.99	97	0.17	***	***	0.1
40	19.16	19.66	25.39	4.42	84	0.34	***	***	1.6
50	17.41	19.63	25.78	3.97	75	0.65	***	***	8.3
75	14.68	19.56	26.32	3.77	65	0.90	***	***	15.8

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	15/ 2/66		33 50 S	151 21 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.82	19.69	24.44	4.95	101	0.17	***	***	0.2
10	21.89	19.71	24.73	5.03	101	0.10	***	***	0.3
20	21.51	19.70	24.83	4.98	99	0.11	***	***	0.2
30	19.96	19.67	25.19	4.73	91	0.23	***	***	0.8
40	18.59	19.64	25.51	4.04	76	0.52	***	***	4.9
50	16.67	19.61	25.94	3.77	68	0.74	***	***	9.4

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	23/ 2/66		33 53 S	151 46 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE

0	21.03	19.68	24.93	5.00	99	***	***	***	0.1
25	20.23	19.71	25.18	5.01	97	***	***	***	0.2
50	20.10	19.71	25.22	4.99	97	***	***	***	0.1
75	17.19	19.66	25.88	4.28	78	***	***	***	2.0
100	15.78	19.62	26.16	4.35	77	***	***	***	7.7
125	14.88	19.58	26.31	4.41	77	***	***	***	5.8
150	14.26	19.55	26.39	4.16	72	***	***	***	7.4
175	13.98	***	***	4.43	**	***	***	***	8.6
200	13.63	19.54	26.51	4.52	77	***	***	***	11.4
225	13.15	19.52	26.59	4.50	76	***	***	***	12.4
250	12.72	19.50	26.64	4.60	77	***	***	***	14.2
275	12.51	19.48	26.65	4.59	76	***	***	***	14.3
300	12.38	19.46	26.65	4.58	76	***	***	***	15.3

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	23/ 2/66		33 52 S	151 39 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE

0	21.25	19.68	24.87	5.02	99	***	***	***	0.5
25	20.24	19.71	25.18	5.08	99	***	***	***	0.2
50	20.08	19.72	25.23	4.98	96	***	***	***	0.2
75	17.73	19.64	25.72	3.96	73	***	***	***	6.1
100	16.01	19.61	26.09	3.85	69	***	***	***	11.4
125	14.45	19.56	26.37	4.09	71	***	***	***	12.4
150	14.18	19.55	26.41	4.24	73	***	***	***	15.9
170	13.91	19.53	26.44	4.33	74	***	***	***	16.3

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	23/ 2/66		33 51 S	151 32 E					
DEPTH	TEMP,	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	I.P.	PART P	TOTAL P	NITRATE
0	21.18	19.68	24.88	5.05	100	***	***	***	0.7
25	20.31	19.70	25.15	5.09	99	***	***	***	0.5
50	20.17	19.71	25.20	4.92	95	***	***	***	0.8
75	18.04	19.64	25.65	4.08	76	***	***	***	9.8
100	15.94	19.60	26.09	3.85	69	***	***	***	19.3
125	14.49	19.55	26.35	3.94	68	***	***	***	26.3

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PT JACKSON 1966	23/ 2/66		33 51 S	151 26 E					
DEPTH	TEMP,	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	I.P.	PART P	TOTAL P	NITRATE
0	22.27	19.64	24.52	5.34	108	***	***	***	0.4
10	21.57	19.65	24.74	5.23	104	***	***	***	0.2
20	21.23	19.68	24.87	4.93	97	***	***	***	1.2
30	20.91	19.69	24.97	5.09	100	***	***	***	0.3
40	20.48	19.70	25.10	5.04	98	***	***	***	0.3
50	20.08	19.73	25.25	5.06	98	***	***	***	0.2
75	18.71	19.67	25.52	4.48	84	***	***	***	5.4
100	16.01	19.61	26.09	3.85	69	***	***	***	16.1

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PI JACKSON 1966	23/ 2/66		33 51 S	151 23 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.68	19.63	24.40	5.28	107	***	***	***	0.8
10	21.37	19.66	24.80	4.86	96	***	***	***	0.7
20	21.09	19.67	24.90	4.84	95	***	***	***	0.7
30	20.65	19.69	25.05	4.88	95	***	***	***	0.3
40	20.30	19.70	25.15	4.90	95	***	***	***	0.5
50	20.23	19.66	25.11	4.93	96	***	***	***	0.5
75	19.91	19.64	25.17	4.86	94	***	***	***	0.5

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PI JACKSON 1966	23/ 2/66		33 50 S	151 21 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.70	19.63	24.38	5.31	108	***	***	***	0.2
10	21.30	19.67	24.83	4.78	95	***	***	***	0.9
20	21.21	19.67	24.87	4.85	96	***	***	***	0.4
30	20.71	19.69	25.03	4.88	96	***	***	***	1.3
40	20.22	19.69	25.16	4.78	93	***	***	***	1.5
50	20.08	19.70	25.20	4.81	93	***	***	***	1.7

STATION	DATE	TIME	LATITUDE		LONGITUDE				
PJ-07	-0/66	0700 K	33	55 S	151	43 E			
315	***	**	*	*	*	*			
SONIC AIR TEMP.	WIND DIR, SP.	ANEM. HEIGHT	CLOUD TYPE	AMT.	VIS. DIR. AMT.	SEA DIR. AMT.	SWELL DIR, AMT.	ATMOS. PRESSURE	WIKE ANGLES
DEPTH WET	DRY	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
2	0	18.83	35.646	25.58	5.42	102	0.24	***	***
2	25	18.49	35.639	25.66	5.36	101	0.27	***	***
2	50	18.19	35.623	25.72	5.17	96	0.31	***	***
2	75	17.82	35.606	25.80	4.93	91	0.40	***	***
2	100	17.42	35.558	25.86	4.77	88	0.47	***	***
2	125	16.64	35.482	25.99	4.68	85	0.53	***	***
2	150	15.28	35.351	26.20	4.46	78	0.71	***	***
2	175	13.96	35.232	26.39	4.16	71	0.85	***	***
1	230	14.05	35.236	26.38	4.27	73	0.87	***	***
1	255	13.20	35.186	26.51	4.26	72	0.90	***	***
1	280	12.71	35.210	26.63	4.85	81	0.76	***	***
1	305	12.27	35.142	26.67	4.67	77	1.08	***	***
1	330	11.89	35.082	26.69	4.57	75	0.88	***	***

STATION PJ=0/ -0/66 DATE 11/10/66 TIME 0944 K LATITUDE 33 56 S LONGITUDE 151 32 E

SONIC AIR TEMP, WIND DIR, SP. WIND DIR, AMT. SEA SWELL DIR, AMT. ATMOS. WIRE ANGLES  
 DEPTH MET DRY DIR, SP. HEIGHT TYPE AMT. VIS, DIR, AMT. PRESSURE CAST1 CAST2 CAST3  
 176 \*\*\* \*\* 1 \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

CAST	DEPTH	TEMP,	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	INORG. P	TOTAL P	NITRATE
1	0	18.14	35.594	25.71	5.40	101	0.30	***	***
1	25	17.91	35.583	25.76	5.41	100	0.31	***	***
1	50	15.84	35.369	26.09	4.19	74	0.71	***	***
1	75	14.69	35.288	26.28	4.08	71	0.82	***	***
1	100	14.07	35.245	26.38	4.15	71	0.86	***	***
1	125	13.32	35.184	26.49	4.22	71	0.90	***	***
1	150	13.02	35.163	26.53	4.26	71	0.92	***	***
1	170	12.37	35.113	26.63	4.37	72	0.98	***	***



STATION	DATE	TIME	LATITUDE	LONGITUDE					
PJ-0/	-0/66	1235 K	33 53 S	151 26 E					
SONIC AIR TEMP.	WIND DIR.	SP. WIND DIR.	SEA DIR.	AMT. PRESSURE	ATMOS. PRESSURE	WIRE ANGLES			
DEPTH WET DRY	DIR.	SP.	DIR.	AMT.	CAS1	CAS2	CAS3		
115 ***	***	00 *	* * *	* * *	* * *	U	* * *		
CAS1	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	19.20	35.618	25.46	5.36	102	0.27	***	***
1	10	18.86	35.617	25.55	5.32	101	0.30	***	***
1	20	18.85	35.623	25.55	5.34	101	0.27	***	***
1	30	18.81	35.614	25.56	5.32	100	0.29	***	***
1	40	18.18	35.577	25.64	5.24	98	0.31	***	***
1	50	16.75	35.496	25.97	4.93	89	0.50	***	***
1	75	15.02	35.342	26.25	4.21	74	0.77	***	***
1	100	13.90	35.226	26.40	4.05	69	0.91	***	***



STATION	DATE	TIME	LATITUDE		LONGITUDE					
PJ00/	11/10/66	1308 K	33	52 S	151	23 E				
86	***	***	1	*	*	*				
SONIC AIR TEMP,	WIND DIR, SP.	WIND ANEM. HEIGHT	CLOUD TYPE	AMT,	VIS. DIR. AMT,	SEA DIR. AMT,	SWELL DIR. AMT,	ATMOS. PRESSURE	WIRE ANGLES	
DEPTH WET DRY	DIR, SP.	WIND DIR, SP.	WIND ANEM. HEIGHT	CLOUD TYPE	AMT,	VIS. DIR. AMT,	SEA DIR. AMT,	SWELL DIR. AMT,	ATMOS. PRESSURE	WIRE ANGLES
86	***	***	1	*	*	*	*	*	*	*
CAST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE	
1	0	19.13	35.618	25.48	5.32	101	0.27	***	***	
1	10	18.80	35.618	25.56	5.34	101	0.27	***	***	
1	20	18.63	35.615	25.60	5.38	101	0.27	***	***	
1	30	18.29	35.609	25.68	5.41	101	0.31	***	***	
1	40	17.75	35.574	25.79	5.22	97	0.36	***	***	
1	50	17.11	35.529	25.91	5.09	93	0.44	***	***	
1	75	14.22	35.261	26.36	3.99	69	0.90	***	***	

STATION	DATE	TIME	LATITUDE	LONGITUDE							
PJ-0/	11/10/66	1352 K	33 51 S	151 21 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	CAST3
60 ***	***	1	*	*	*	*	*	*	0	*	*
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE		
1	0	19.08	35.625	25.50	5.36	102	0.27	***	***		
1	10	18.46	35.624	25.65	5.43	102	1.09	***	***		
1	20	18.19	35.615	25.71	5.47	102	0.31	***	***		
1	30	18.13	35.610	25.73	5.41	101	0.31	***	***		
1	40	17.88	35.592	25.77	5.27	98	0.34	***	***		
1	50	17.19	35.534	25.90	5.01	92	0.50	***	***		

STATION	DATE	TIME	LATITUDE	LONGITUDE					
PJ-0/	11/10/66	1425 K	33 53 S	151 18 E					
SONIC AIR TEMP.	WIND	SEA	SWELL	ATMOS.	WIND ANGLES				
DEPTH WET DRY	DIR, SP.	DIR. AMT.	DIR. AMT.	PRESSURE	CAST1 CAST2 CAST3				
55 *** **	2 *	*	*	*	0 * *				
CST	DEPTH	TEMP.	SALINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	INORG. P	TOTAL P	NITRATE
1	0	18.69	35.617	25.59	5.56	105	0.31	***	***
1	10	18.08	35.606	25.73	5.58	104	0.31	***	***
1	20	18.03	35.606	25.75	5.45	101	0.34	***	***
1	30	17.99	35.597	25.75	5.38	100	0.34	***	***
1	40	17.04	35.517	25.92	4.92	90	0.47	***	***
1	50	16.23	35.460	26.07	4.76	85	0.56	***	***

DATA  
PART 2  
HYDROLOGY  
WOLLONGONG STATIONS

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	11/ 1/66		34 26 S	151 19 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.65	19.70	24.79	5.13	102	0.16	***	***	0.13
25	19.75	19.71	25.31	5.17	99	0.16	***	***	0.4
50	17.93	19.69	25.74	4.41	82	0.45	***	***	4.5
75	16.86	19.65	25.95	4.41	80	0.50	***	***	5.7
100	15.77	19.61	26.15	4.33	77	0.60	***	***	7.5
125	14.77	19.58	26.33	4.54	79	0.66	***	***	8.4
150	13.73	19.52	26.47	4.58	78	0.75	***	***	11.5
175	13.31	19.51	26.53	4.67	79	0.73	***	***	11.6
200	12.78	19.48	26.60	4.73	79	0.78	***	***	12.6
225	11.80	19.40	26.69	4.53	74	0.92	***	***	20.2
250	11.34	19.37	26.72	4.50	73	0.98	***	***	21.9
275	11.11	19.36	26.76	4.61	74	0.97	***	***	23.0
300	10.78	19.33	26.78	4.59	73	1.00	***	***	23.6

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	11/ 1/66		34 26 S	151 12 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.64	19.69	24.78	5.13	102	0.18	***	***	0.5
25	19.28	19.69	25.41	5.14	98	0.20	***	***	0.3
50	18.11	19.68	25.68	4.56	85	0.39	***	***	3.1
75	16.75	19.65	25.98	4.41	80	0.50	***	***	6.9
100	15.94	19.62	26.12	4.18	74	0.60	***	***	9.5
125	14.72	19.57	26.32	4.40	76	0.69	***	***	12.1
140	13.72	19.52	26.47	4.53	77	0.88	***	***	13.1

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	11/ 1/66		34 25 S	151 4 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	20.67	19.67	25.02	5.45	107	0.18	***	***	0.5
10	20.20	19.68	25.15	5.48	106	0.11	***	***	0.2
20	20.16	19.68	25.19	5.51	107	0.17	***	***	0.2
30	19.25	19.66	25.37	5.68	108	0.17	***	***	1.3
40	17.64	19.66	25.78	5.13	95	0.28	***	***	2.8
50	17.02	19.66	25.92	4.56	83	0.45	***	***	8.4
75	15.88	19.62	26.13	4.27	76	0.60	***	***	

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	11/ 1/66		34 25 S	151 1 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	20.37	19.66	25.08	6.00	117	0.15	***	***	0.3
10	18.54	19.66	25.55	6.24	117	0.17	***	***	0.2
20	17.95	19.66	25.70	5.34	99	0.22	***	***	0.6
30	16.96	19.65	25.93	4.46	81	0.48	***	***	3.9
40	16.89	19.65	25.94	4.36	79	0.52	***	***	3.7

STATION	DATE	TIME	LATITUDE		LONGITUDE				
WOLLONGONG	11/ 1/66		34	25 S	150	58 E			
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I. P.	PART P	TOTAL P	NITRATE
0	21.08	19.66	24.89	5.38	106	0.20	***	***	5.1
10	18.29	19.65	25.60	5.97	112	0.20	***	***	4.9
20	16.70	19.65	25.98	4.35	79	0.54	***	***	4.4
25	16.65	19.65	25.99	4.29	78	0.56	***	***	5.5

32

STATION	DATE	TIME	LATITUDE		LONGITUDE				
WOLLONGONG	25/ 1/66		34	26 S	151	19 E			
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I. P.	PART P	TOTAL P	NITRATE
0	21.18	19.77	25.00	5.18	102	0.14	***	***	0.1
25	20.89	19.76	25.07	5.23	103	0.14	***	***	0.4
50	18.00	19.70	25.74	4.92	91	0.24	***	***	1.4
75	17.05	19.67	25.93	4.79	87	0.35	***	***	3.1
100	15.78	19.62	26.16	4.55	81	0.50	***	***	6.6
125	14.67	19.57	26.33	4.80	83	0.60	***	***	8.9
150	14.03	19.54	26.43	4.56	78	0.75	***	***	9.9
175	13.45	19.52	26.52	4.67	79	0.75	***	***	11.6
200	13.13	19.50	26.55	4.72	79	0.78	***	***	11.6
225	12.89	19.48	26.59	4.74	79	0.82	***	***	11.6
250	12.36	19.45	26.65	4.75	78	0.91	***	***	11.8
275	12.00	19.43	26.69	4.76	78	0.92	***	***	13.1
300	11.35	19.38	26.74	4.69	76	1.03	***	***	15.1

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	25/ 1/66		34 26 S	151 12 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN X SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.81	19.73	24.78	5.10	102	0.16	***	***	0.3
25	21.13	19.75	24.99	5.20	103	0.13	***	***	0.3
50	17.83	19.69	25.78	4.94	91	0.26	***	***	1.3
75	16.32	19.63	26.04	4.61	83	0.50	***	***	6.0
100	14.98	19.59	26.29	4.61	81	0.64	***	***	6.5
125	14.19	19.55	26.42	4.66	80	0.66	***	***	8.9
140	14.01	19.54	26.44	4.62	79	0.84	***	***	9.3

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	25/ 1/66		34 25 S	151 4 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN X SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.11	19.73	24.69	5.08	102	0.12	***	***	0.2
10	21.83	19.73	24.77	5.09	102	0.16	***	***	0.1
20	21.79	19.73	24.78	5.09	102	0.12	***	***	0.1
30	21.67	19.72	24.81	5.10	102	0.13	***	***	0.0
40	20.87	19.70	25.00	5.21	102	0.18	***	***	0.1
50	18.51	19.68	25.58	5.21	98	0.26	***	***	0.0
75	15.84	19.61	26.14	4.31	77	0.76	***	***	5.4



STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	25/ 1/66		34 25 S	151 1 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.05	19.73	24.71	5.05	101	0.20	***	***	0:0
10	21.80	19.73	24.78	5.19	104	0.16	***	***	0:1
20	21.64	19.73	24.82	5.08	101	0.21	***	***	0:1
30	21.51	19.72	24.85	5.12	102	0.26	***	***	0:0
40	20.42	19.69	25.11	5.22	102	0.23	***	***	0:1

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	25/ 1/66		34 25 S	150 58 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.00	19.73	24.73	5.12	103	0.25	***	***	0:0
10	21.69	19.72	24.80	5.13	102	0.24	***	***	0:0
20	21.05	19.71	24.96	5.17	102	0.22	***	***	0:1
25	20.08	19.68	25.18	4.99	97	0.34	***	***	0:6

STATION	DATE	TIME	LATITUDE	LONGITUDE					
HOLLONGONG	1 / 2/66		34 25 S	151 2 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.14	19.69	24.64	4.90	99	0.14	***	***	0.3
10	22.08	19.70	24.66	4.96	100	0.18	***	***	0.4
20	22.00	19.69	24.68	5.01	101	0.16	***	***	0.0
30	19.03	19.65	25.41	4.83	92	0.28	***	***	1.3
40	16.52	19.62	25.99	4.33	78	0.51	***	***	6.6
50	15.02	19.56	26.24	4.07	71	0.72	***	***	12.4

STATION	DATE	TIME	LATITUDE	LONGITUDE					
HOLLONGONG	3 / 2/66		34 26 S	151 19 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.52	19.71	24.55	4.72	96	0.12	***	***	0.1
25	22.04	19.71	24.69	4.99	100	0.20	***	***	0.3
50	18.46	19.68	25.59	4.81	90	0.28	***	***	0.9
75	17.28	19.67	25.87	4.64	85	0.37	***	***	3.3
100	16.44	19.64	26.04	4.57	82	0.47	***	***	6.7
125	15.49	19.61	26.21	4.55	80	0.57	***	***	9.0
150	14.77	19.58	26.32	4.51	79	0.59	***	***	10.3
175	14.02	19.54	26.43	4.48	77	0.68	***	***	12.7
200	13.82	19.53	26.46	4.59	78	0.68	***	***	12.2
225	12.88	19.48	26.59	4.77	80	0.77	***	***	13.9
250	12.57	19.47	26.63	4.82	80	0.80	***	***	15.1
275	12.29	19.45	26.66	4.79	79	0.80	***	***	17.0
300	11.81	19.41	26.70	4.62	75	0.90	***	***	19.1

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	3/ 2/66		34 26 S	151 12 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I. P.	PART P	TOTAL P	NITRATE
0	22.67	19.71	24.51	4.66	95	0.14	***	***	0.8
25	21.64	19.70	24.78	5.02	100	0.16	***	***	0.9
50	18.07	19.65	25.65	4.37	81	0.45	***	***	9.3
75	16.67	19.66	26.00	4.39	83	0.46	***	***	8.4
100	15.39	19.60	26.21	4.39	77	0.59	***	***	10.9
125	14.53	19.57	26.37	4.63	90	0.62	***	***	10.9
140	13.99	19.54	26.44	4.55	78	0.68	***	***	12.2

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	3/ 2/66		34 25 S	151 4 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I. P.	PART P	TOTAL P	NITRATE
0	22.36	19.70	24.98	5.01	101	0.16	***	***	0.9
10	21.68	19.69	24.76	5.02	100	0.19	***	***	0.3
20	21.40	19.68	24.83	5.08	101	***	***	***	0.2
30	18.63	19.64	25.50	4.32	81	0.44	***	***	3.2
40	17.51	19.65	25.79	4.65	86	0.44	***	***	2.8
50	15.27	19.58	26.22	4.13	73	0.66	***	***	13.0
75	14.25	19.54	26.36	4.11	71	0.72	***	***	14.4

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	3/ 2/66		34 25 S	151 1 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.40	19.69	24.56	4.96	100	0.21	***	***	0.5
10	21.87	19.69	24.71	5.03	101	0.19	***	***	0.5
20	21.63	19.69	24.77	5.05	101	0.20	***	***	0.4
30	20.94	19.68	24.95	5.05	99	0.21	***	***	0.2
40	16.11	19.59	26.04	4.18	75	0.65	***	***	8.7

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	3/ 2/66		34 25 S	150 56 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.18	19.68	24.61	5.09	102	0.19	***	***	0.3
10	21.38	19.68	24.83	5.09	101	0.20	***	***	0.2
20	20.52	19.67	25.05	5.12	100	0.20	***	***	0.2
25	18.35	19.63	25.56	4.65	87	0.35	***	***	3.4

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	9 / 2/66		34 26 S	151 19 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN X SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.14	19.75	24.99	4.93	97	0.03	***	***	0.4
25	20.34	19.75	25.21	5.20	101	0.03	***	***	0.3
50	18.27	19.71	25.69	5.30	99	0.12	***	***	0.2
75	16.86	19.66	25.96	4.53	82	0.35	***	***	4.8
100	16.35	19.63	26.04	4.66	84	0.45	***	***	6.7
125	15.02	19.60	26.29	4.65	81	0.52	***	***	8.5
150	14.08	19.56	26.45	4.74	81	0.57	***	***	10.2
175	13.52	19.52	26.52	4.73	80	0.64	***	***	12.1
200	13.29	19.51	26.54	4.76	80	0.64	***	***	12.7
225	13.33	19.50	26.52	4.73	80	0.67	***	***	13.4
250	12.78	19.46	26.58	4.76	79	0.75	***	***	14.4
275	12.26	19.44	26.64	4.82	79	0.75	***	***	14.9
300	11.63	19.39	26.70	4.70	76	0.82	***	***	20.6

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	9 / 2/66		34 26 S	151 12 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN X SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.50	19.70	24.83	5.00	99	0.07	***	***	0.2
25	21.40	19.72	24.88	5.05	100	0.04	***	***	0.5
50	17.72	19.63	25.72	4.17	77	0.44	***	***	5.7
75	16.75	19.64	25.96	4.09	74	0.52	***	***	7.6
100	15.59	19.62	26.20	4.55	81	0.49	***	***	8.5
125	14.15	19.55	26.41	4.39	79	0.69	***	***	13.9
140	14.06	19.54	26.42	4.34	74	0.71	***	***	13.3

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	9/ 2/66		34 25 S	151 4 E					
DEPTH	TEMP,	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	I.P.	PART P	TOTAL P	NITRATE
0	21.84	19.70	24.73	4.97	99	0.10	***	***	0.3
10	21.54	19.70	24.82	5.00	99	0.10	***	***	0.2
20	21.50	19.70	24.83	5.00	99	0.10	***	***	0.3
30	21.50	19.70	24.83	5.00	99	0.10	***	***	0.3
40	20.44	19.67	25.07	5.10	99	0.14	***	***	0.3
50	18.73	19.64	25.48	4.74	89	0.27	***	***	1.2
75	15.14	19.58	26.24	3.99	70	0.68	***	***	12.3

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	9/ 2/66		34 25 S	151 1 E					
DEPTH	TEMP,	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT,	I.P.	PART P	TOTAL P	NITRATE
0	21.66	19.70	24.78	5.12	102	0.11	***	***	0.1
10	21.15	19.70	24.92	5.21	103	0.11	***	***	0.5
20	21.11	19.70	24.93	5.17	102	0.11	***	***	0.1
30	20.94	19.69	24.97	5.12	101	0.14	***	***	0.0
40	20.44	19.67	25.07	4.93	96	0.19	***	***	0.4

STATION	DATE	TIME	LATITUDE	LONGITUDE					
MULLUNGONG	9/ 2/66		34 28 S	150 58 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.73	19.70	24.76	5.17	103	0.10	***	***	0.2
10	21.25	19.70	24.89	5.25	104	0.10	***	***	0.2
20	21.10	19.70	24.93	5.27	104	0.15	***	***	0.5
25	21.02	19.69	24.94	5.03	99	0.18	***	***	0.3

STATION	DATE	TIME	LATITUDE	LONGITUDE					
MOLLONGONG	16/ 2/66		34 26 S	151 19 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.70	19.62	24.37	5.00	102	0.10	***	***	1.2
25	20.72	19.75	25.10	5.18	102	0.09	***	***	0.2
50	17.80	***	***	3.80	***	0.46	***	***	3.4
75	16.86	19.62	25.90	3.88	70	0.67	***	***	6.2
100	15.75	19.62	26.16	4.42	78	0.53	***	***	5.1
125	14.53	19.57	26.36	4.49	78	***	***	***	5.9
150	14.03	19.54	26.43	4.51	77	0.69	***	***	6.7
175	13.64	19.52	26.49	4.47	76	0.67	***	***	6.7
200	13.79	19.50	26.43	4.54	77	0.70	***	***	7.7
225	13.31	19.50	26.52	4.64	78	0.70	***	***	7.7
250	12.86	19.45	26.55	4.65	78	0.78	***	***	8.3

STATION WOLLONGONG DATE 16/ 2/66 TIME 34 26 S LONGITUDE 151 16 E

DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN X SAT.	I.P.	PART P	TOTAL P	NITRATE
0	22.12	***	***	***	***	***	***	***	***
25	21.29	***	***	***	***	***	***	***	***
50	20.35	***	***	***	***	***	***	***	***
75	17.52	***	***	***	***	***	***	***	***
75	17.23	***	***	***	***	***	***	***	***
100	16.03	***	***	***	***	***	***	***	***
125	15.01	***	***	***	***	***	***	***	***
150	14.31	***	***	***	***	***	***	***	***
175	13.29	***	***	***	***	***	***	***	***

STATION WOLLONGONG DATE 23/ 2/66 TIME 34 26 S LONGITUDE 151 19 E

DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN X SAT.	I.P.	PART P	TOTAL P	NITRATE
0	20.64	19.72	25.09	5.11	100	0.09	***	***	0.9
25	19.67	19.72	25.35	5.14	99	0.09	***	***	0.4
50	19.34	19.71	25.42	4.96	95	0.15	***	***	1.1
75	16.77	19.66	25.99	4.70	85	0.35	***	***	4.4
100	15.96	19.63	26.14	4.73	84	0.45	***	***	6.6
125	14.45	19.57	26.38	4.55	79	0.63	***	***	12.2
150	14.19	19.55	26.41	4.49	77	0.67	***	***	13.5
175	14.01	19.55	26.44	4.55	78	0.67	***	***	13.1
200	13.78	19.54	26.48	4.69	80	0.65	***	***	12.9
225	13.28	19.52	26.56	4.81	81	0.67	***	***	11.8
250	12.50	19.48	26.66	4.87	81	0.71	***	***	16.0
275	11.88	19.42	26.70	4.72	77	0.82	***	***	19.1
300	11.72	19.41	26.71	4.69	76	0.87	***	***	20.4



STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	23/ 2/66		34 26 S	151 12 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	20.55	19.72	25.11	5.17	101	0.09	***	***	0.3
25	19.32	19.72	25.43	5.20	99	0.07	***	***	0.1
50	19.14	19.72	25.48	5.14	98	0.12	***	***	0.1
75	17.57	19.68	25.82	4.80	88	0.26	***	***	2.2
100	16.15	19.65	26.12	4.76	85	0.39	***	***	5.0
125	15.40	19.62	26.25	4.70	83	0.50	***	***	8.8
140	14.55	19.57	26.36	4.20	73	0.70	***	***	14.6

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	23/ 2/66		34 25 S	151 4 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.66	19.66	24.72	5.23	104	0.12	***	***	0.4
10	20.71	19.65	24.96	5.22	102	0.19	***	***	0.3
20	20.37	19.71	25.15	5.15	100	0.09	***	***	0.1
30	20.34	19.72	25.16	5.14	100	0.07	***	***	0.1
40	20.31	19.72	25.17	5.09	99	0.10	***	***	0.1
50	20.07	19.72	25.24	5.07	98	0.09	***	***	0.1
75	19.69	19.72	25.33	4.95	95	0.16	***	***	0.9

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	23/ 2/66		34 25 S	151 1 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.57	19.66	24.75	5.34	106	0.15	***	***	0.2
10	21.23	19.66	24.84	5.35	106	0.15	***	***	0.1
20	20.62	19.65	25.00	4.84	95	0.25	***	***	0.8
30	20.42	19.68	25.10	4.85	94	0.16	***	***	0.6
40	20.33	19.70	25.14	4.77	93	0.20	***	***	0.9

STATION	DATE	TIME	LATITUDE	LONGITUDE					
WOLLONGONG	23/ 2/66		34 25 S	150 58 E					
DEPTH	TEMP.	CHLORINITY	SIGMA-T	OXYGEN	OXYGEN % SAT.	I.P.	PART P	TOTAL P	NITRATE
0	21.70	19.65	24.70	5.38	107	0.15	***	***	0.4
10	20.71	19.65	24.97	5.02	98	0.32	***	***	0.7
20	20.50	19.67	25.05	4.82	94	0.19	***	***	0.8
25	20.45	19.67	25.07	4.69	91	0.22	***	***	1.1

## OCEANOGRAPHICAL STATION LISTS

1. Hydrological and planktological observations by F.R.V. *Warreen* in south-eastern Australian waters, 1938-39
2. Hydrological and planktological observations by F.R.V. *Warreen* in south-eastern Australian waters, 1940-42
3. Hydrological and planktological observations by F.R.V. *Warreen* in south-western Australian waters, 1947-50
4. Onshore hydrological investigations in eastern Australia, 1942-50
5. Estuarine hydrological investigations in eastern Australia, 1940-50. Queensland: Nerang and Coomera Rivers, Moreton Bay and Brisbane River, Logan River, Dunwich Oyster Lease; New South Wales: Richmond River, Clarence River, Macleay River, Hastings River, Manning River, Port Stephens, Tilligerry Creek, Hawkesbury River
6. Estuarine hydrological investigations in eastern Australia, 1940-50. New South Wales: Middle Harbour and Port Jackson, Georges River-Botany Bay
7. Estuarine hydrological investigations in eastern Australia, 1940-50. New South Wales: Port Hacking, Lake Illawarra, Shoalhaven River, Jervis Bay, Clyde River, Moruya River, Tuross River, Wagonga Inlet; Victoria: Port Phillip; Tasmania: Tamar River, Derwent River, Huon River, D'Entrecasteaux Channel, Pittwater, Lake Dobson (freshwater), Penna Dam (freshwater)
8. Hydrological investigations in south-western Australia, 1944-50
9. Records of twenty-four hourly hydrological observations at selected stations in eastern Australian estuarine systems, 1942-50. Queensland: Logan River; New South Wales: Richmond River, Clarence River, Macleay River, Hastings River, Manning River, Port Stephens, Hawkesbury River, Georges River, Port Hacking, Clyde River, Tuross River; Tasmania: Tamar River, Derwent River
10. Records of twenty-four hourly hydrological observations at Shell Point, Georges River, New South Wales, 1942-50
11. Analyses of bottom deposits in eastern Australia, 1946-50
12. Estuarine hydrological investigations in eastern and south-western Australia, 1951
13. Analysis of bottom deposits in eastern and south-western Australia, 1951 and records of twenty-four hourly hydrological observations at selected stations in eastern Australian estuarine systems, 1951
14. Onshore hydrological investigations in eastern and south-western Australia, 1951
15. Estuarine hydrological investigations in eastern and south-western Australia, 1952
16. Analysis of bottom deposits in eastern and south-western Australia, 1952 and records of twenty-four hourly hydrological observations at selected stations in eastern Australian estuarine systems, 1952
17. Onshore hydrological investigations in eastern and south-western Australia, 1952
18. Onshore hydrological investigations in eastern and south-western Australia, 1953
19. Onshore planktological investigations in eastern Australia, 1945-54
20. Surface sampling in the Tasman Sea, 1953
21. Estuarine hydrological investigations in eastern and south-western Australia, 1953
22. Further onshore planktological investigations in eastern Australia, 1945-54
23. Planktological investigations made by F.R.V. *Derwent Hunter* in eastern Australian waters, 1952-54
24. Onshore hydrological investigations in eastern and south-western Australia, 1954
25. Surface sampling in the Tasman Sea, 1954
26. Estuarine hydrological investigations in eastern and south-western Australia, 1954
27. Onshore and oceanic hydrological investigations in eastern and south-western Australia, 1955
28. Surface sampling in the Tasman and Coral Seas, 1955
29. Estuarine hydrological investigations in eastern and south-western Australia, 1955
30. Onshore and oceanic hydrological investigations in eastern and south-western Australia, 1956
31. Surface sampling in the Tasman and Coral Seas and the south-eastern Indian Ocean, 1956
32. Estuarine hydrological investigations in eastern and south-western Australia, 1956
33. Coastal hydrological investigations in eastern and south-western Australia, 1957
34. Coastal hydrological investigations at Port Hacking, New South Wales, 1957
35. Coastal hydrological investigations at Eden, New South Wales, 1957

## OCEANOGRAPHICAL STATION LISTS

(Continued)

36. Surface sampling in the Tasman and Coral Seas, 1957
37. Hydrological investigations from F.R.V. *Derwent Hunter*, 1957
38. Coastal hydrological investigations in the New South Wales tuna fishing area, 1958
39. Surface sampling in the Coral and Tasman Seas, 1958
40. Coastal hydrological investigations in south-eastern Australia, 1958
41. Oceanic investigations in eastern Australian waters, F.R.V. *Derwent Hunter*, 1958
42. Coastal investigations at Port Hacking, New South Wales, 1958
43. Oceanic investigations in eastern Australia, H.M.A. Ships *Queenborough*, *Quickmatch*, and *Warrego*, 1958
44. Oceanic observations in Antarctic waters, M.V. *Magga Dan*, 1959
45. Coastal hydrological investigations in eastern Australia, 1959
46. Coastal hydrological investigations in the New South Wales tuna fishing area, 1959
47. Coastal investigations at Port Hacking, New South Wales, 1959
48. Oceanic investigations in eastern Australian waters, F.R.V. *Derwent Hunter*, 1959
49. Coastal hydrological sampling Rottneest Island, W.A., and Port Moresby, Papua, during the I.G.Y. (1957-58), and surface sampling in the Tasman and Coral Seas, 1959
50. Surface sampling in the Coral and Tasman Seas, 1960
51. Coastal hydrological investigations in eastern Australia, 1960
52. Coastal investigations at Port Hacking, New South Wales, 1960
53. Coastal hydrological investigations in the New South Wales tuna fishing area, 1960
54. Investigations by F.R.V. *Derwent Hunter* on the eastern Australian tuna grounds in 1961
55. Investigations by F.R.V. *Weerutta* on the South Australian tuna grounds in 1961
56. Investigations by F.R.V. *Marelda* on the eastern Australian tuna grounds in 1961
57. Investigations by F.V. *Estelle Star* in Western Australian waters in 1961
58. Temperature observations from Australian tuna fishing vessels in 1961
59. Investigations by F.R.V. *Derwent Hunter* on the eastern Australian tuna grounds in 1962
60. Investigations by F.R.V. *Investigator* on the South Australian tuna grounds in 1962
61. Investigations by F.R.V. *Marelda* on the eastern Australian tuna grounds in 1962
62. Investigations by F.V. *Estelle Star* in Western Australian waters in 1962
63. Temperature and salinity observations from Australian tuna fishing vessels in 1962
64. Investigations by F.R.V. *Investigator* on the South Australian tuna grounds in 1963
65. Investigations by F.R.V. *Marelda* on the eastern Australian tuna grounds in 1963
66. Temperature and salinity observations from Australian tuna fishing vessels in 1963
67. Investigations by F.R.V. *Investigator* on the South Australian tuna grounds in 1964
68. Investigations by F.R.V. *Marelda* on the eastern Australian tuna grounds in 1964
69. Temperature and salinity observations from Australian tuna fishing vessels in 1964
70. Investigations by F.R.V. *Investigator* on the South Australian tuna grounds in 1965
71. Investigations by F.V. *Estelle Star* in South Australian and New South Wales waters in 1965
72. Investigations by F.R.V. *Marelda* on the eastern Australian tuna grounds in 1965
73. Investigations by F.V. *Degei* in Queensland waters in 1965
74. Temperature and salinity observations from Australian tuna fishing vessels in 1965
75. Investigations by F.V. *Degei* in New South Wales, South and Western Australian waters in 1966
76. Investigations by F.V. *Estelle Star* in South and Western Australian waters in 1966
77. Temperature and salinity observations from Australian tuna fishing vessels in 1966
78. Drift bottle releases and recoveries in Bass Strait and adjacent waters, 1958-1962
79. Drift bottle releases and recoveries in Western Australia, 1956-1957
80. Investigations by F.R.V. *Lancelin* in Western Australian waters in 1963.
81. Coastal investigations off Port Hacking, New South Wales, in 1961
82. Coastal investigations off Port Hacking, New South Wales, in 1962
83. Coastal investigations off Port Hacking, New South Wales, in 1963
84. Coastal investigations off Port Hacking, New South Wales, in 1964
87. Coastal investigations off Port Jackson and Wollongong, New South Wales, in 1966
88. Coastal investigations off Maria Island, Tasmania, 1961-66