

OCEANOGRAPHICAL STATION LIST

VOLUME 69

TEMPERATURE AND SALINITY OBSERVATIONS FROM
AUSTRALIAN TUNA FISHING VESSELS IN 1964

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

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MELBOURNE, 1968

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When citing this station list, abbreviate as follows:
CSIRO Aust. Oceanogr. Stn List 69.

OCEANOGRAPHICAL STATION LIST

VOLUME 69

Temperature and Salinity Observations from Australian Tuna Fishing Vessels in 1964

I. INTRODUCTION

In 1961, a programme for the systematic measurement of sea-water temperatures from fishing vessels was begun by CSIRO (CSIRO Aust. 1961; Vaux 1961). The data presented in this volume are the result of such measurements made from fishing vessels during the course of their normal fishing operations on the South Australian and Eastern Australian tuna fishing grounds during 1964.

II. METHODS

Temperature.—Fishermen were issued with surface thermometers and instructions for their use (Vaux 1961). Thermometers were graduated in whole degrees over the range 30–120 degF with an accuracy of ± 0.5 degF. Temperatures were taken in degF and converted to degC (nearest tenth) before listing. Temperatures listed in this volume are considered accurate to about ± 0.5 degC although on some vessels a higher accuracy was probably achieved.

Salinity.—Water samples for subsequent salinity analysis were taken by several vessels. The samples were analysed at either Cronulla or Port Lincoln using a chlorinity-temperature meter of the conductivity type (Hamon 1956) and converting from chlorinity to salinity by the relation -

$$\text{Salinity} = 0.03 + 1.805 \times \text{Chlorinity}$$

Salinities are considered accurate to about $\pm 0.05\%$.

Accuracy of Positions.—For reporting the position of sampling, fishermen used a grid reference system (Kesteven and Williams 1962) consisting of rectangles of approximately 6 x 5 nautical miles (actually 6 x 6 minutes of latitude and longitude). A fisherman's position wrong by one grid rectangle could be in error, therefore, by up to 6 miles. South Australian positions may be in error by twice this amount as vessels operate for longer periods out of sight of land. Errors greater than this are considered to be infrequent. Grid references were converted to latitude and longitude by computer before listing.

REFERENCES

- CSIRO AUST. (1961).—Tuna search programme. Southern Pelagic Project Special Report No. 1 (Mimeogr.) (CSIRO : Cronulla.)
- HAMON, B.V. (1956).—A portable temperature-chlorinity bridge for estuarine investigations and seawater analysis. J. scient. Instrum. 33, 329-33.
- KESTEVEN, G.L., and WILLIAMS, G.R. (1962).—Fishermen and scientists work together. Aust. Fish. Newsl. 21(5), 21-4.
- VAUX, D. (1961).—Measurement of sea water temperatures by fishermen. Aust. Fish. Newsl. 20(11), 19.

III. ACKNOWLEDGEMENTS

Thanks are due to the skippers, owners, and crew of the vessels from which the observations listed in this volume were made.

IV. DATA

The data were subjected to various quality control checks before listing by C.D.C. 3600 Computer. Speeds between successive positions were calculated, and finding of impossible values led to the amendment or rejection of the suspect data. An explanation of the headings used is given at the beginning of the listing.

A.D. Crooks wrote the computer programmes, and D. Vaux had the overall responsibility for the collection, processing, and compilation of the observations.

DATA
TEMPERATURES AND SALINITIES

EXPLANATION OF HEADINGS

VESSEL	A code number is given for each vessel:	
	T1 <u>Favorite</u>	W2 <u>Eden Star</u>
	T2 <u>Degei</u>	W3 <u>Marconi's Cross</u>
	T3 <u>Huon</u>	W4 <u>Imlay</u>
	T5 <u>Hermay</u>	W6 <u>Lismore Star</u>
	T7 <u>Tacoma</u>	W7 <u>Cape Baron</u>
	T9 <u>Cape Byron</u>	W8 <u>Mary Anne Simms</u>
	U1 <u>Mameena</u>	W9 <u>Challenge</u>
	U5 <u>Mirrabooka</u>	X1 <u>Enfield</u>
	U7 <u>Pelamis</u>	X2 <u>Richard Allen</u>
	U8 <u>St Michelle</u>	X3 <u>Agnes James</u>
CRUISE STATION NUMBER	Generally assigned only when a member of CSIRO staff accompanied the cruise	
TIME	For longitude west of 142°30'E., times are given in Central Australian Standard Time, GMT +9½ hr; east of 142°30'E., times are given in Eastern Australian Standard Time, GMT +10 hr	
LATITUDE LONGITUDE	Given in degrees and minutes	
TEMP.	Sea surface temperatures recorded in °C	
SALINITY	Given in parts per thousand	
	A blank indicates no data available	

VESSE-	CRUISE	STATION	YR.	MIN.	DAY	TIME	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SMELL	WEA.	VIS.	BAROM.	SAMPLING	METHOD
		NUMBER				∠				DN.	AMT.	DN.	AMT.	DN.	AMT.		
17	2	1930	3	22	1930	35	33 S	135	45 E	18.3							1
17	2	2030	3	22	2030	35	27 S	135	51 E	18.6							1
17	27	0815	4	21	0815	36	15 S	135	51 E	18.1							1
17	27	1200	4	21	1200	36	15 S	135	51 E	17.7							1
17	27	1500	4	21	1500	36	15 S	135	51 E	17.7							1
17	27	1800	4	21	1800	36	15 S	135	51 E	18.1							1
17	27	0700	4	22	0700	36	21 S	135	45 E	17.9							1
17	27	0900	4	22	0900	36	21 S	135	45 E	17.9							1
17	27	1200	4	22	1200	36	3 S	135	45 E	18.3							1
17	27	1500	4	22	1500	36	3 S	135	45 E	18.4							1
17	27	1800	4	22	1800	35	45 S	135	51 E	18.2							1
17	27	1900	4	22	1900	35	45 S	135	57 E	18.3							1
17	27	2000	4	22	2000	35	27 S	136	3 E	18.2							1
17	27	2100	4	22	2100	35	21 S	136	9 E	17.9							1
17	31	0900	4	27	0900	35	51 S	135	45 E	18.2							1
17	31	1200	4	27	1200	35	51 S	135	45 E	18.3							1
17	31	1500	4	27	1500	35	51 S	135	51 E	18.2							1
17	31	1800	4	27	1800	35	45 S	135	51 E	17.7							1
17	31	1900	4	27	1900	35	33 S	135	57 E	17.9							1
17	31	0900	4	28	0900	35	15 S	135	33 E	17.9							1
17	31	1200	4	28	1200	35	27 S	135	27 E	18.1							1
17	31	1500	4	28	1500	35	39 S	135	15 E	18.3							1
17	31	1800	4	28	1800	35	27 S	135	45 E	18.2							1
17	31	1900	4	28	1900	35	27 S	135	57 E	18.1							1
17	31	0900	4	29	0900	35	39 S	135	27 E	18.1							1
17	31	1200	4	29	1200	35	51 S	135	27 E	18.1							1
17	31	1500	4	29	1500	35	51 S	135	27 E	17.8							1
17	34	0700	5	5	0700	36	3 S	135	45 E	18.1							1
17	34	0900	5	5	0900	36	3 S	135	45 E	18.1							1
17	34	1255	5	5	1255	35	57 S	135	39 E	17.6							1
17	34	1500	5	5	1500	35	39 S	135	39 E	17.7							1
17	34	1800	5	5	1800	35	45 S	135	39 E	17.8							1
17	34	2100	5	5	2100	35	21 S	135	39 E	17.3							1
17	34	0700	5	5	0700	35	3 S	135	39 E	17.8							1
17	38	0700	5	10	0700	35	57 S	135	57 E	17.9							1
17	38	1000	5	10	1000	35	57 S	135	33 E	17.7							1
17	38	1200	5	10	1200	36	3 S	135	33 E	17.2							1
17	38	1500	5	10	1500	35	57 S	135	39 E	17.2							1
17	38	1800	5	10	1800	35	57 S	135	39 E	17.7							1
17	38	2100	5	10	2100	35	45 S	135	57 E	17.9							1

VESSEL - CRUISE STATION YR. MPH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND DN, AMT, DN, AMT, SEA SWELL MEA. VIS. BAROM. SAMPLING METHOD

11	22	64	11	6	1200	36	21	S	150	27	E	17.9	35.59					1
11	22	64	11	6	1300	36	21	S	150	21	E	18.9	35.59					1
11	22	64	11	6	1500	36	15	S	150	21	E	18.9	35.59					1
11	22	64	11	6	1600	36	15	S	150	15	E	18.7	35.57					1
11	22	64	11	7	0900	36	15	S	150	21	E	18.6	35.55					1
11	22	64	11	7	1200	36	33	S	150	21	E	18.7	35.53					1
11	22	64	11	7	1500	36	51	S	150	3	E	17.2	35.53					1
11	25	64	11	9	0600	37	3	S	150	9	E	15.9	35.52					1
11	25	64	11	9	0700	37	3	S	150	9	E	16.4	35.55					1
11	25	64	11	9	0805	37	3	S	150	21	E	17.0	35.53					1
11	25	64	11	9	0905	36	57	S	150	27	E	18.4	35.53					1
11	25	64	11	9	1000	36	27	S	150	21	E	18.4	35.55					1
11	25	64	11	9	1100	36	39	S	150	21	E	18.5	35.53					1
11	25	64	11	9	1200	36	33	S	150	21	E	17.7	35.53					1
11	25	64	11	9	1300	36	39	S	150	21	E	18.3	35.57					1
11	25	64	11	9	1400	36	45	S	150	15	E	17.4	35.61					1
11	25	64	11	9	1500	36	51	S	150	3	E	17.2	35.53					1
11	25	64	11	9	1700	36	57	S	149	57	E	17.2	35.53					1
11	27	64	11	11	0600	36	57	S	150	3	E	17.0	35.53					1
11	27	64	11	11	0700	36	45	S	150	9	E	17.2	35.55					1
11	27	64	11	11	0800	36	33	S	150	21	E	17.5	35.55					1
11	27	64	11	11	0900	36	33	S	150	21	E	18.5	35.55					1
11	27	64	11	11	1000	36	33	S	150	21	E	18.4	35.57					1
11	27	64	11	11	1200	36	33	S	150	21	E	18.7	35.55					1
11	27	64	11	11	1300	36	39	S	150	21	E	19.1	35.53					1
11	27	64	11	11	1500	36	33	S	150	21	E	18.5	35.55					1
11	27	64	11	11	1600	36	45	S	150	9	E	17.6	35.55					1
11	27	64	11	11	1700	36	51	S	150	3	E	17.5	35.57					1
11	28	64	11	14	0600	36	51	S	150	3	E	16.9	35.52					1
11	28	64	11	14	0700	36	51	S	150	9	E	17.5	35.50					1
11	28	64	11	14	0800	36	45	S	150	15	E	18.4	35.48					1
11	28	64	11	14	0930	36	45	S	150	15	E	18.4	35.48					1
11	28	64	11	14	1200	36	51	S	150	21	E	18.7	35.53					1
11	31	64	11	15	0600	36	57	S	150	3	E	17.8	35.52					1
11	31	64	11	15	0900	36	45	S	150	15	E	19.1	35.53					1
11	31	64	11	15	1200	36	51	S	150	21	E	19.4	35.53					1
11	31	64	11	15	1500	36	51	S	150	21	E	19.1	35.53					1
11	32	64	11	16	0900	37	3	S	150	21	E	18.9	35.52					1
11	32	64	11	16	1200	37	9	S	150	21	E	19.3	35.52					1
11	32	64	11	16	1500	37	15	S	150	21	E	19.2	35.53					1

VESSE-	CRUISE	STATION	YR.	MT.	DAY	TIME	4	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SWELL	WEA.	VIS.	BAROM.	SAMPLING	METHOD
11	68	64	12	17	1600	36	21	S	150	39	E	19.1							1
11	68	64	12	17	1700	36	21	S	150	27	E	20.4							1
11	68	64	12	17	1800	36	15	S	150	21	E	19.1							1
11	68	64	12	18	0700	36	21	S	150	37	E	18.8							1
11	68	64	12	18	0800	36	21	S	150	39	E	19.7							1
11	68	64	12	18	0900	36	21	S	150	51	E	18.9							1
11	68	64	12	18	1000	36	27	S	150	51	E	19.0							1
11	68	64	12	18	1200	36	27	S	150	57	E	19.2							1
11	68	64	12	18	1300	36	33	S	150	57	E	19.2							1
11	68	64	12	18	1300	36	27	S	151	9	E	19.2							1
11	68	64	12	18	1800	36	33	S	150	51	E	19.2							1
11	68	64	12	18	1900	36	33	S	150	39	E	18.9							1
11	68	64	12	18	2000	36	33	S	150	33	E	19.1							1
11	68	64	12	18	2100	36	33	S	150	21	E	18.8							1
11	68	64	12	18	2200	36	27	S	150	9	E	17.2							1
11	68	64	12	19	0600	36	27	S	150	9	E	16.7							1
11	68	64	12	19	0700	36	27	S	150	9	E	16.7							1
11	68	64	12	19	0800	36	39	S	150	9	E	16.8							1
11	68	64	12	19	0900	36	45	S	150	3	E	16.6							1
11	68	64	12	19	1000	36	51	S	149	57	E	16.3							1
11	68	64	12	19	1100	37	3	S	149	57	E	16.4							1
11	69	64	12	20	0600	37	3	S	150	3	E	16.0							1
11	69	64	12	20	0700	36	57	S	150	45	E	15.9							1
11	69	64	12	20	0800	36	51	S	150	21	E	16.1							1
11	69	64	12	20	0900	36	51	S	150	33	E	18.7							1
11	69	64	12	20	1000	36	51	S	150	45	E	18.6							1
11	69	64	12	20	1100	36	39	S	150	45	E	21.3							1
11	69	64	12	20	1200	36	33	S	150	51	E	20.2							1
11	69	64	12	20	1315	36	33	S	150	57	E	20.3							1
11	69	64	12	21	1530	36	45	S	150	3	E	16.9							1
11	69	64	12	21	1600	36	51	S	150	3	E	16.7							1
11	69	64	12	21	1700	37	3	S	149	57	E	16.8							1
11	75	64	12	24	0800	37	3	S	150	3	E	17.3							1
11	75	64	12	24	0900	37	3	S	150	15	E	18.0							1
11	75	64	12	24	1000	36	57	S	150	27	E	18.8							1
11	75	64	12	24	1100	36	51	S	150	27	E	19.4							1
11	75	64	12	24	1200	36	45	S	150	27	E	19.7							1
11	75	64	12	24	1300	36	39	S	150	27	E	20.6							1
11	75	64	12	24	1400	36	33	S	150	27	E	21.6							1
11	75	64	12	24	1500	36	39	S	150	21	E	20.3							1

VESSEL	CRUISE NUMBER	STATION NUMBER	YR.	MTM.	DAY	TIME	Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND DN.	SEA DN.	SWELL DN.	WEA.	VIS.	BAROM.	SAMPLING METHOD
11	75	64	12	24	1600	36	39 S	150	15 E	19.9	35.53							1
11	75	64	12	24	1700	36	33 S	150	15 E	20.2	35.53							1
11	75	64	12	24	1800	36	39 S	150	15 E	20.7	35.53							1
11	75	64	12	24	1900	36	45 S	150	9 E	19.1	35.53							1
11	75	64	12	24	2000	36	57 S	150	3 E	18.7	35.52							1
11	77	64	12	25	0700	36	57 S	150	3 E	17.9								1
11	77	64	12	25	0800	36	57 S	150	9 E	18.6	35.53							1
11	77	64	12	25	0900	36	51 S	150	21 E	19.2								1
11	77	64	12	25	1200	36	51 S	150	21 E	19.0	35.55							1
11	77	64	12	25	1500	37	3 S	150	9 E	19.4	35.52							1
11	77	64	12	25	1635	37	3 S	150	15 E	19.0	35.55							1
11	77	64	12	25	1800	37	3 S	150	15 E	19.6	35.55							1
11	77	64	12	25	2000	37	3 S	150	21 E	19.4								1
11	78	64	12	26	0800	37	3 S	150	9 E	18.7								1
11	78	64	12	26	0900	36	57 S	150	21 E	19.6								1
11	78	64	12	26	1000	36	51 S	150	21 E	19.6	35.53							1
11	78	64	12	26	1100	36	51 S	150	15 E	19.4	35.53							1
11	78	64	12	26	1200	36	57 S	150	15 E	19.3	35.50							1
11	78	64	12	26	1300	37	3 S	150	21 E	19.4								1
11	78	64	12	26	1400	36	57 S	150	15 E	19.3	35.52							1
11	78	64	12	26	1500	36	57 S	150	9 E	19.4	35.57							1
11	78	64	12	26	1600	37	3 S	150	15 E	19.6								1
11	79	64	12	27	0800	37	3 S	150	3 E	17.4								1
11	79	64	12	27	0900	37	3 S	150	9 E	18.5	35.53							1
11	79	64	12	27	1000	36	57 S	150	21 E	18.7	35.53							1
11	79	64	12	27	1100	36	57 S	150	15 E	18.8								1
11	79	64	12	27	1200	36	57 S	150	15 E	19.1								1
11	79	64	12	27	1500	36	51 S	150	9 E	19.4								1
11	79	64	12	27	1600	36	57 S	150	9 E	18.8								1
11	79	64	12	27	1700	37	3 S	150	3 E	18.2	35.55							1

VESSEL	CRUISE NUMBER	STATION NUMBER	YR.	MTH.	DAY	TIME	←	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SWELL	HEA.	VIS.	BAROM.	SAMPLING METHOD
12	15	64	3	27	0600	35	39 S	135	15 E	18.3	35.86						1
12	15	64	3	27	0900	35	45 S	135	27 E	18.3	35.79						1
12	15	64	3	27	1200	35	45 S	135	33 E	18.2	35.84						1
12	15	64	3	27	1500	36	21 S	135	57 E	18.3	35.77						1
12	15	64	3	27	1800	36	21 S	136	3 E	18.5	35.93						1
12	15	64	3	28	0900	36	15 S	135	57 E	18.1	35.86						1
12	15	64	3	28	1200	36	9 S	135	51 E	18.3	35.82						1
12	15	64	3	28	1500	36	21 S	136	3 E	18.4	35.82						1
12	15	64	3	28	1800	36	27 S	136	21 E	18.4	35.86						1
12	15	64	3	28	2100	35	45 S	136	21 E	18.3	35.81						1
12	15	64	3	29	0900	36	15 S	135	57 E	18.3	35.90						1
12	15	64	3	29	1200	36	15 S	135	57 E	18.3	35.86						1
12	15	64	3	29	1500	36	15 S	135	57 E	18.3	35.84						1
12	15	64	4	1	0900	36	9 S	135	57 E	18.3	35.88						1
12	15	64	4	1	1200	36	21 S	136	3 E	18.5	35.86						1
12	15	64	4	1	1500	36	3 S	135	45 E	18.6	35.91						1
12	15	64	4	1	1800	35	51 S	135	39 E	18.2	35.84						1
12	15	64	4	2	0900	36	27 S	135	3 E	18.3	35.86						1
12	15	64	4	2	1200	36	3 S	135	45 E	18.4	35.88						1
12	15	64	4	2	1500	36	3 S	135	45 E	18.7	35.84						1
12	15	64	4	2	1800	36	9 S	135	51 E	18.6	35.90						1
12	15	64	4	2	2100	35	39 S	136	3 E	18.3	35.86						1
12	15	64	4	3	0900	36	15 S	135	57 E	18.6	35.86						1
12	15	64	4	3	1200	36	9 S	135	51 E	18.6	35.86						1
12	15	64	4	3	1500	36	9 S	135	51 E	18.6	35.88						1
12	15	64	4	3	1800	35	57 S	135	57 E	18.2	35.88						1
12	21	64	4	6	0900	35	45 S	136	3 E	18.2	35.86						1
12	21	64	4	6	1200	36	15 S	135	57 E	18.6	35.95						1
12	21	64	4	6	1500	36	15 S	135	57 E	18.9	35.86						1
12	21	64	4	6	1800	36	15 S	135	57 E	18.8	35.82						1
12	22	64	4	11	0600	36	3 S	135	51 E	18.2	35.86						1
12	22	64	4	11	0900	36	3 S	135	45 E	18.2	35.86						1
12	22	64	4	11	1200	35	57 S	135	39 E	18.1	35.93						1
12	22	64	4	11	1500	36	3 S	135	45 E	18.3	35.79						1
12	22	64	4	11	1800	35	57 S	135	39 E	18.3	35.77						1
12	24	64	4	15	0600	35	39 S	135	51 E	18.3	35.82						1
12	24	64	4	15	0900	35	51 S	135	51 E	18.3	35.82						1
12	24	64	4	15	1200	35	51 S	135	39 E	18.1	35.81						1
12	24	64	4	15	1500	35	57 S	135	21 E	17.8	35.81						1
12	24	64	4	15	1800	36	3 S	135	27 E	17.7	35.75						1

VESSE- CHUISE STATION YR, MTH, DAY TIME / LATITUDE LONGITUDE TEMP, SALINITY WIND SEA SWELL MEA. VIS. BAROM, SAMPLING METHOD

VESSE-	CHUISE	STATION	YR,	MTH,	DAY	TIME /	LATITUDE	LONGITUDE	TEMP,	SALINITY	WIND	SEA	SWELL	MEA.	VIS.	BAROM,	SAMPLING	METHOD
12	16	64	11	2	1200	36	9	S	150	51	E	16.3	35.57				1	
12	16	64	11	2	1500	36	45	S	150	39	E	18.1	35.53				1	
12	16	64	11	2	1800	36	45	S	150	3	E	16.2	35.48				1	
12	16	64	11	3	0900	36	57	S	150	57	E	15.9	35.48				1	
12	26	64	11	5	0900	36	45	S	150	21	E	17.5	35.52				1	
12	26	64	11	5	1200	36	33	S	150	27	E	18.8	35.57				1	
12	26	64	11	6	0900	36	15	S	150	15	E	18.4	35.57				1	
12	26	64	11	6	1200	36	9	S	150	21	E	18.7	35.57				1	
12	26	64	11	6	1500	36	15	S	150	21	E	18.6	35.57				1	
12	26	64	11	7	0900	36	21	S	150	15	E	18.3	35.57				1	
12	26	64	11	7	1200	36	27	S	150	27	E	18.6	35.57				1	
12	26	64	11	7	1500	36	57	S	150	3	E	16.9	35.52				1	
12	46	64	11	28	0815	37	3	S	150	9	E	17.8					1	
12	46	64	11	28	0900	36	57	S	150	21	E	18.3					1	
12	46	64	11	28	1000	36	57	S	150	27	E	18.3					1	
12	46	64	11	28	1100	37	3	S	150	21	E	18.9					1	
12	46	64	11	28	1200	37	9	S	150	15	E	18.9					1	
12	46	64	11	28	1300	37	9	S	150	9	E	17.2					1	
12	53	64	12	2	0800	37	3	S	149	57	E	16.7					1	
12	53	64	12	2	0900	37	3	S	150	9	E	16.7					1	
12	53	64	12	2	0910	37	3	S	150	9	E	16.7					1	
12	53	64	12	2	1000	37	3	S	150	21	E	16.7					1	
12	53	64	12	2	1100	36	45	S	150	27	E	16.7					1	
12	53	64	12	2	1200	36	33	S	150	27	E	18.3					1	
12	53	64	12	2	1300	36	27	S	150	33	E	18.6					1	
12	53	64	12	2	1400	36	27	S	150	21	E	18.9					1	
12	53	64	12	3	0700	36	21	S	150	9	E	18.3					1	
12	53	64	12	3	0800	36	15	S	150	9	E	17.5					1	
12	53	64	12	3	0800	36	15	S	150	21	E	17.8					1	
12	53	64	12	3	0900	36	15	S	150	33	E	18.9					1	
12	53	64	12	3	1000	36	9	S	150	33	E	18.9					1	
12	53	64	12	3	1100	36	21	S	150	33	E	19.2					1	
12	53	64	12	3	1200	36	27	S	150	27	E	19.4					1	
12	53	64	12	3	1240	36	33	S	150	27	E	19.4					1	
12	53	64	12	3	1300	36	33	S	150	21	E	19.3					1	
12	53	64	12	3	1400	36	39	S	150	15	E	18.9					1	
12	53	64	12	3	1500	36	51	S	150	15	E	18.5					1	
12	53	64	12	3	1600	37	3	S	150	3	E	17.8					1	
12	57	64	12	6	0615	37	3	S	149	51	E	17.5					1	
12	57	64	12	6	0700	37	3	S	150	3	E	16.7					1	

VESSEL	CRUISE NUMBER	STATION NUMBER	YR.	MO.	DAY	TIME	LONGITUDE	TEMP.	SALINITY	WIND DN.	SEA DN.	SWELL DN.	HEA. AMT.	VIS. AMT.	BAROM. AMT.	SAMPLING METHOD
12	76	64	12	27	0800	37	3 S 149	57 E 17.6								1
12	76	64	12	27	0900	37	3 S 150	9 E 18.4								1
12	76	64	12	27	0945	37	3 S 150	21 E 17.8								1
12	76	64	12	27	1000	37	3 S 150	21 E 19.2								1
12	76	64	12	27	1100	37	3 S 150	27 E 19.2								1
12	76	64	12	27	1200	36	57 S 150	21 E 19.2								1
12	76	64	12	27	1300	36	45 S 150	15 E 19.3								1
12	76	64	12	27	1400	36	45 S 150	21 E 19.1								1
12	76	64	12	27	1500	36	45 S 150	15 E 19.2	35.93							1
12	76	64	12	27	1525	36	45 S 150	15 E 19.4								1
12	76	64	12	27	1600	36	51 S 150	15 E 19.5								1
12	76	64	12	27	1609	36	51 S 150	15 E 19.5	35.66							1
12	76	64	12	27	1700	36	57 S 150	9 E 19.0								1
12	82	64	12	27	1800	37	3 S 149	57 E 18.7								1
12	82	64	12	30	0700	37	3 S 149	57 E 18.0								1
12	82	64	12	30	0800	37	3 S 150	9 E 16.3								1
12	82	64	12	30	0900	36	57 S 150	15 E 16.4	35.57							1
12	82	64	12	30	1000	36	45 S 150	15 E 17.6								1
12	82	64	12	30	1030	36	39 S 150	15 E 17.8								1
12	82	64	12	30	1100	36	33 S 150	15 E 18.0								1
12	82	64	12	30	1200	36	39 S 150	15 E 18.1	35.55							1
12	82	64	12	30	1300	36	51 S 150	9 E 17.6								1
12	82	64	12	30	1400	37	3 S 150	3 E 17.6								1

VESSE-	CRUISE	STATION	YR.	MTH.	DAY	TIME	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SWELL	WEA.	VIS.	BAROM.	SAMPLING
	NUMBER									DN. AMT.	DN. AMT.	DN. AMT.				METHOD
14	14	64	10	25	0600	36	57 S 150	9 E 18.7	35.52							1
14	14	64	10	25	0700	37	3 S 150	15 E 18.5	35.52							1
14	14	64	10	25	0800	36	51 S 150	15 E 18.6	35.55							1
14	14	64	10	25	0900	36	51 S 150	27 E 18.3	35.59							1
14	14	64	10	25	1000	36	45 S 150	21 E 18.6	35.53							1
14	14	64	10	25	1100	36	39 S 150	21 E 19.1	35.55							1
14	14	64	10	25	1200	36	39 S 150	21 E 19.1	35.57							1
14	14	64	10	25	1300	36	39 S 150	21 E 19.1	35.53							1
14	14	64	10	25	1400	36	33 S 150	27 E 19.3	35.55							1
14	14	64	10	25	1500	36	33 S 150	33 E 19.2	35.55							1
14	14	64	10	26	0700	36	45 S 150	9 E 18.6	35.59							1
14	14	64	10	26	0900	36	45 S 150	27 E 18.2	35.53							1
14	14	64	10	26	1000	36	45 S 150	39 E 17.1	35.53							1
14	14	64	10	26	1300	36	27 S 150	27 E 19.4	35.53							1
14	14	64	10	26	1500	36	15 S 150	39 E 19.1	35.66							1
14	14	64	10	26	1700	36	15 S 150	21 E 18.8	35.57							1
14	14	64	10	27	0705	36	15 S 150	21 E 18.2	35.59							1
14	14	64	10	27	0800	36	21 S 150	27 E 18.4	35.57							1
14	14	64	10	27	0900	36	39 S 150	21 E 18.8	35.57							1
14	14	64	10	27	1200	36	51 S 150	15 E 18.9	35.55							1
14	14	64	10	27	1300	36	57 S 150	9 E 19.0	35.57							1
14	14	64	10	27	1400	37	3 S 149	57 E 18.3	35.57							1
14	19	64	11	2	0900	36	45 S 150	33 E 16.3	35.55							1
14	19	64	11	2	1200	36	27 S 150	39 E 18.4	35.57							1
14	19	64	11	2	1800	37	3 S 149	57 E 16.7	35.61							1
14	23	64	11	6	0600	36	57 S 150	9 E 16.6	35.55							1
14	23	64	11	6	1200	36	9 S 150	21 E 18.7	35.64							1
14	23	64	11	6	1500	36	21 S 150	15 E 18.6	35.66							1
14	23	64	11	7	0600	36	21 S 150	15 E 16.5	35.52							1
14	23	64	11	7	0745	36	9 S 150	21 E 18.4	35.64							1
14	23	64	11	7	0900	36	15 S 150	27 E 18.4	35.73							1
14	23	64	11	7	1300	36	39 S 150	15 E 16.9	35.61							1
14	29	64	11	14	0900	36	51 S 150	9 E 18.2	35.55							1
14	29	64	11	14	1015	36	51 S 150	27 E	35.59							1
14	29	64	11	14	1310	36	51 S 150	27 E	35.55							1
14	29	64	11	14	1500	36	51 S 150	27 E	35.59							1
14	50	64	11	15	1200	36	51 S 150	27 E	35.59							1
14	52	64	12	4	1200	36	39 S 150	27 E	35.53							1
14	52	64	12	4	1500	36	33 S 150	27 E	35.53							1
14	61	64	12	5	0600	36	27 S 150	9 E	35.59							1

VESSE-	CRUISE	STATION	YR.	MO.	DAY	TIME	✓	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SWELL	WEA.	VIS.	BAROM.	SAMPLING
		NUMBER										DN, AMT,	DN, AMT,	DN, AMT,				METHOD
14	61	64	12	5	1200	36	15	S	150	21	E							1
14	61	64	12	5	1500	36	9	S	150	21	E							1
14	62	64	12	7	0900	36	9	S	150	21	E							1
14	62	64	12	7	1200	36	21	S	150	21	E							1
14	64	64	12	13	0900	36	27	S	150	15	E	17.3						1
14	64	64	12	13	1200	36	21	S	150	33	E	18.6						1
14	64	64	12	13	1500	36	27	S	150	3	E	16.8						1
14	65	64	12	14	0900	36	27	S	150	15	E	16.8						1
14	65	64	12	14	1200	36	45	S	150	33	E	18.8						1
14	65	64	12	14	1500	37	3	S	150	27	E							1
14	66	64	12	15	0900	36	39	S	150	21	E							1
14	66	64	12	15	1200	36	15	S	150	21	E							1
14	66	64	12	15	1500	36	15	S	150	21	E							1
14	70	64	12	16	0900	36	9	S	150	21	E	16.9						1
14	70	64	12	16	1200	35	45	S	150	33	E	18.9						1
14	71	64	12	17	0600	36	27	S	150.	9	E	20.0						1
14	71	64	12	17	0900	36	21	S	150	45	E	20.0						1
14	71	64	12	17	1200	36	21	S	150	33	E	18.9						1
14	71	64	12	17	1500	36	33	S	150	33	E							1
14	72	64	12	18	0900	36	45	S	150	33	E	19.4						1
14	72	64	12	18	1200	36	27	S	150	57	E							1
14	72	64	12	18	1500	36	33	S	151	9	E	19.4						1
14	72	64	12	18	2100	36	27	S	150	9	E							1
14	74	64	12	20	0900	36	27	S	150	21	E	20.6						1
14	74	64	12	20	1200	36	27	S	150	57	E	21.1						1
14	74	64	12	20	1500	36	27	S	151	3	E	20.6						1

VESSEL	CRUISE NUMBER	STATION NUMBER	YR.	MTH.	DAY	TIME	LONGITUDE	TEMP.	SALINITY	WIND DN. AMT.	SEA DN. AMT.	SWELL DN. AMT.	BAROM.	SAMPLING METHOD
16	85	64	1	5	0600	37	3 S 149	57 E 17.9	35.48					1
16	85	64	1	5	0900	36	39 S 150	15 E 18.4	35.55					1
16	85	64	1	5	1200	36	33 S 150	15 E 18.5	35.53					1
16	85	64	1	5	1500	36	51 S 150	15 E 17.3	35.53					1
16	86	64	1	6	0600	36	57 S 150	9 E 17.0	35.50					1
16	90	64	1	8	0900	37	3 S 150	21 E 18.4	35.61					1
16	90	64	1	8	1200	36	45 S 150	21 E 20.4	35.66					1
16	90	64	1	8	1500	37	3 S 149	57 E 17.9	35.52					1
16	90	64	1	9	0900	36	51 S 150	21 E 20.3						1
16		64	1	9	1200	36	57 S 150	15 E 19.3						1
16		64	1	16	0900	35	3 S 135	51 E 17.5						1
16		64	1	16	1200	34	57 S 135	27 E 18.9						1
16		64	1	16	1300	34	57 S 135	33 E 18.0						1
16		64	1	16	1400	34	57 S 135	33 E 18.9						1
16		64	1	16	1500	34	57 S 135	39 E 18.9						1
16		64	1	16	1505	34	57 S 135	39 E 18.9						1
16		64	1	16	1700	34	57 S 135	39 E 18.9						1
16		64	1	16	1800	34	57 S 135	39 E 18.9						1
16		64	1	16	1830	34	57 S 135	39 E 18.9						1
16		64	1	16	2000	34	57 S 135	39 E 18.9						1
16		64	1	19	0800	35	3 S 135	51 E 18.3						1
16		64	1	19	0900	35	9 S 135	45 E 18.4						1
16		64	1	19	1000	35	9 S 135	45 E 18.3						1
16		64	1	19	1100	35	15 S 135	39 E 18.3						1
16		64	1	19	1200	35	15 S 135	39 E 18.4						1
16		64	1	19	1230	35	15 S 135	39 E 18.4						1
16		64	1	19	1700	35	15 S 135	39 E 18.3						1
16		64	1	21	0900	35	19 S 135	45 E 18.6						1
16		64	1	21	0930	35	9 S 135	45 E 18.6						1
16		64	1	21	1000	35	15 S 135	39 E 18.6						1
16		64	1	21	1100	35	15 S 135	39 E 18.6						1
16		64	1	21	1300	35	15 S 135	39 E 18.8						1
16		64	1	21	1400	35	15 S 135	39 E 18.8						1
16		64	1	21	1900	35	15 S 135	39 E 18.8						1
16		64	1	30	0800	35	3 S 135	39 E 19.2						1
16		64	1	30	1000	35	15 S 135	33 E 19.4						1
16		64	1	30	1400	34	45 S 135	3 E 20.3						1
16		64	1	30	1630	34	51 S 134	45 E 19.7						1
16		64	1	30	1700	34	51 S 134	45 E 18.7						1
16		64	1	30	1930	34	51 S 134	45 E 19.7						1

VESSE-	CRUISE	STATION	YH,	MTH,	DAY	TIME	∠	LONGITUDE	TEMP,	SALINITY	WIND	SEA	SWELL	MEA,	VIS,	BAROM,	SAMPLING
		NUMBER									DN,	AMT,	DN,	AMT,			METHOD
16	64	4	0900	34	57	S	135	51	E	18.3							1
16	64	4	0905	34	57	S	135	51	E	18.3							1
16	64	2	0930	34	21	S	135	9	E	16.7							1
16	64	2	5 1100	34	15	S	135	3	E	17.2							1
16	64	2	5 1200	34	21	S	134	57	E	17.2							1
16	64	2	5 1300	34	27	S	134	57	E	17.8							1
16	64	2	5 1500	34	39	S	134	51	E	17.8							1
16	64	2	5 1600	34	45	S	134	51	E	17.8							1
16	64	2	5 1700	34	51	S	134	57	E	18.1							1
16	64	2	11 1000	34	57	S	135	45	E	18.1							1
16	64	2	11 1200	34	51	S	135	27	E	18.1							1
16	64	2	11 1215	34	51	S	135	27	E	18.1							1
16	64	2	11 1300	34	51	S	135	27	E	18.1							1
16	64	2	11 1500	34	45	S	135	15	E	17.5							1
16	64	2	11 1700	34	45	S	135	9	E	17.5							1
16	64	2	11 1800	34	45	S	135	3	E	17.5							1
16	64	2	12 1000	34	51	S	134	45	E	18.4							1
16	64	2	12 1030	34	51	S	134	45	E	18.4							1
16	64	2	12 1500	34	51	S	135	21	E	18.4							1
16	64	2	12 1600	34	57	S	135	39	E	18.3							1
16	64	2	14 0900	34	57	S	135	33	E	17.3							1
16	64	2	14 1000	34	51	S	135	21	E	18.1							1
16	64	2	14 1100	34	45	S	135	15	E	18.3							1
16	64	2	14 1230	34	45	S	135	3	E	18.0							1
16	64	2	14 1245	34	51	S	135	3	E	18.1							1
16	64	2	14 1430	34	51	S	134	51	E	18.1							1
16	64	2	14 1600	34	51	S	134	39	E	18.4							1
16	64	2	14 1700	34	51	S	134	39	E	18.6							1
16	64	2	14 1830	34	51	S	134	39	E	18.6							1
16	64	2	14 1930	34	51	S	134	39	E	18.6							1
16	64	3	13 0830	35	51	S	135	27	E	18.6							1
16	64	3	13 0900	35	51	S	135	27	E	18.6							1
16	64	3	13 1100	35	57	S	135	33	E	18.6							1
16	64	3	13 1200	36	3	S	135	39	E	18.6							1
16	64	3	13 1400	36	3	S	135	39	E	18.6							1
16	64	3	13 1500	36	3	S	135	39	E	18.6							1
16	64	3	13 1600	35	57	S	135	39	E	18.6							1
16	64	3	13 1605	35	57	S	135	39	E	18.6							1
16	64	3	13 1630	35	57	S	135	39	E	18.6							1
16	64	3	15 0800	35	33	S	135	33	E	17.9							1

VESSE - CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SHELL SEA SWELL HEA. VIS. BAROM. SAMPLING METHOD

16	64	3	15	0900	35	45	S	135	27	E	18.1	1
16	64	3	15	1000	35	57	S	135	27	E	18.6	1
16	64	3	15	1010	35	57	S	135	27	E	18.6	1
16	64	3	15	1100	36	3	S	135	33	E	18.6	1
16	64	3	15	1200	36	9	S	135	39	E	18.6	1
16	64	3	15	1300	36	15	S	135	45	E	18.6	1
16	64	3	15	1400	36	9	S	135	45	E	18.6	1
16	64	3	15	1500	36	9	S	135	39	E	18.6	1
16	64	3	15	1600	36	3	S	135	39	E	18.6	1
16	64	3	15	1700	36	3	S	135	39	E	18.6	1
16	64	3	19	1400	35	51	S	135	33	E	18.6	1
16	64	3	19	1500	35	51	S	135	33	E	18.6	1
16	64	3	19	1520	35	57	S	135	27	E	18.6	1
16	64	3	19	1600	36	3	S	135	33	E	18.6	1
16	64	3	19	1700	35	57	S	135	27	E	18.6	1
16	64	3	19	1800	35	57	S	135	21	E	18.6	1
16	64	3	19	1900	35	51	S	135	27	E	18.6	1
16	64	3	20	0930	35	57	S	135	27	E	18.6	1
16	64	3	20	0945	35	57	S	135	27	E	18.6	1
16	64	3	20	1200	35	51	S	135	33	E	18.6	1
16	64	3	28	1000	35	57	S	135	39	E	18.6	1
16	64	3	28	1030	35	57	S	135	33	E	18.6	1
16	64	3	28	1230	35	57	S	135	39	E	18.6	1
16	64	4	1	1100	35	45	S	135	51	E	18.4	1
16	64	4	1	1200	35	57	S	135	51	E	18.6	1
16	64	4	1	1300	36	3	S	135	51	E	18.4	1
16	64	4	1	1400	36	9	S	135	51	E	18.6	1
16	64	4	1	1500	36	15	S	135	57	E	18.6	1
16	64	4	1	1530	36	21	S	135	57	E	18.6	1
16	64	4	1	1600	36	21	S	135	57	E	18.6	1
16	64	4	1	1700	36	15	S	135	3	E	18.6	1
16	64	4	2	0800	36	21	S	135	57	E	18.6	1
16	64	4	2	0900	36	21	S	135	3	E	18.6	1
16	64	4	2	1100	36	21	S	135	9	E	18.6	1
16	64	4	2	1200	36	21	S	135	3	E	18.6	1
16	64	4	2	1230	36	15	S	135	3	E	18.6	1
16	64	4	2	1700	36	9	S	135	57	E	18.6	1
16	64	4	5	1300	35	45	S	135	45	E	18.6	1
16	64	4	5	1345	35	51	S	135	39	E	18.6	1
16	64	4	5	1630	35	51	S	135	39	E	18.6	1

VESSE-	CRUISE	STATION	YR.	MTH.	DAY	TIME	Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	MIND	SEA	SWELL	WEA.	VIS.	BAROM.	SAMPLING
		NUMBER										DN.	AMT.	DN.	AMT.			METHOD
16	64	4	5	1900	35	51	S	135	27	E	18.9							1
16	64	4	6	0800	35	51	S	135	27	E	19.0							1
16	64	4	6	0900	35	51	S	135	39	E	19.0							1
16	64	4	6	0930	35	51	S	135	45	E	19.0							1
16	64	4	6	1100	36	9	S	135	45	E	19.1							1
16	64	4	6	1145	36	9	S	135	45	E	19.1							1
16	64	4	6	1430	36	9	S	135	45	E	19.1							1
16	64	4	6	1600	35	57	S	135	39	E	19.1							1
16	64	4	15	1300	36	3	S	135	45	E	18.2							1
16	64	4	15	1330	36	3	S	135	45	E	18.2							1
16	64	4	15	1700	36	3	S	135	45	E	18.2							1
16	64	4	15	2000	36	15	S	135	45	E	17.2							1
16	64	4	16	0700	36	15	S	135	45	E	17.6							1
16	64	4	16	1000	36	21	S	135	51	E	17.8							1
16	64	4	16	1500	36	15	S	135	57	E	18.2							1
16	64	4	16	1700	36	9	S	135	45	E	18.2							1
16	64	4	17	0900	36	3	S	135	57	E	18.2							1
16	64	4	17	0915	36	3	S	135	57	E	18.2							1
16	64	4	17	0930	36	3	S	135	57	E	18.2							1
16	64	4	17	1100	36	9	S	135	51	E	18.2							1
16	64	4	17	1200	36	9	S	135	57	E	18.2							1
16	64	4	17	1400	36	15	S	136	3	E	18.2							1
16	64	4	17	1505	36	15	S	136	3	E	18.2							1
16	64	4	17	1530	36	15	S	136	3	E	18.2							1
16	64	4	17	1700	36	15	S	135	51	E	18.2							1
16	64	4	20	0730	36	15	S	136	3	E	17.9							1
16	64	4	20	0800	36	15	S	136	3	E	17.9							1
16	64	4	20	0900	36	27	S	136	3	E	17.8							1
16	64	4	20	1000	36	33	S	136	3	E	17.8							1
16	64	4	20	1100	36	33	S	135	57	E	17.7							1
16	64	4	20	1200	36	27	S	135	51	E	17.7							1
16	64	4	20	1330	36	33	S	136	9	E	17.7							1
16	64	4	20	1445	36	33	S	136	9	E	17.7							1
16	64	4	20	1630	36	33	S	136	9	E	17.7							1
16	64	4	20	1700	36	33	S	136	9	E	17.7							1
16	64	4	25	0800	35	57	S	135	51	E	18.2							1
16	64	4	25	0900	36	9	S	135	51	E	18.2							1
16	64	4	25	1000	36	15	S	135	51	E	18.2							1
16	64	4	25	1100	36	21	S	135	45	E	18.2							1
16	64	4	25	1130	36	21	S	135	45	E	18.2							1

VESSE-	CRUISE	STATION	YR.	MIM.	DAY	TIME	✓	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SWELL	WEA.	VIS.	BAROM.	SAMPLING	METHOD
17	1	64	2	9	0900	34	51	S	135	27	E	18.1	35.99	1					1
17	1	64	2	9	1000	34	51	S	135	9	E	18.2	36.04	1					1
17	1	64	2	9	1025	34	51	S	135	9	E	17.7	36.00	1					1
17	1	64	2	9	1200	34	45	S	135	9	E	17.9	35.97	1					1
17	1	64	2	9	1300	34	45	S	134	57	E	17.6	35.93	1					1
17	1	64	2	9	1310	34	45	S	134	57	E	18.3	36.04	1					1
17	1	64	2	9	1345	34	45	S	134	57	E	17.6	35.91	1					1
17	1	64	2	9	1500	34	45	S	134	57	E	18.3	36.04	1					1
17	1	64	2	11	0900	34	45	S	134	45	E	17.9	35.90	1					1
17	1	64	2	11	0945	34	45	S	134	39	E	17.8	35.84	1					1
17	1	64	2	11	1155	34	45	S	134	39	E	18.1	35.88	1					1
17	1	64	2	11	1300	34	45	S	134	39	E	17.9	35.81	1					1
17	1	64	2	11	1515	34	45	S	134	45	E	17.8	35.82	1					1
17	1	64	2	11	1625	34	45	S	134	45	E	18.3	35.88	1					1
17	1	64	2	12	0930	34	45	S	134	39	E	18.1	35.77	1					1
17	1	64	2	12	1345	34	39	S	134	45	E	18.5	35.97	1					1
17	1	64	2	12	1500	34	39	S	134	45	E	18.4	35.99	1					1
17	1	64	2	12	1515	34	39	S	134	45	E	18.3	36.00	1					1
17	1	64	2	12	1620	34	39	S	134	45	E	18.3	35.97	1					1
17	1	64	2	12	1715	34	39	S	134	45	E	19.3	35.99	1					1
17	1	64	2	12	1750	34	39	S	134	45	E	19.2	35.99	1					1
17	3	64	2	17	0800	34	51	S	135	3	E	17.6	35.97	1					1
17	3	64	2	17	0915	34	45	S	135	3	E	17.7	35.93	1					1
17	3	64	2	17	0925	34	45	S	135	3	E	18.1	35.97	1					1
17	3	64	2	17	1200	34	45	S	134	51	E	18.2	35.84	1					1
17	3	64	2	17	1230	34	45	S	134	39	E	18.2	35.84	1					1
17	3	64	2	17	1250	34	45	S	134	39	E	18.2	35.82	1					1
17	3	64	2	17	1410	34	39	S	134	45	E	18.3	35.84	1					1
17	3	64	2	17	1425	34	39	S	134	45	E	18.2	35.84	1					1
17	3	64	2	18	0745	34	39	S	134	45	E	17.9	35.82	1					1
17	3	64	2	18	0900	34	39	S	134	45	E	18.1	35.81	1					1
17	3	64	2	18	1005	34	39	S	134	45	E	18.1	35.84	1					1
17	3	64	2	18	1015	34	39	S	134	45	E	18.1	35.84	1					1
17	3	64	2	19	0930	34	45	S	134	51	E	18.1	35.93	1					1
17	3	64	2	19	1100	34	45	S	135	3	E	18.1	35.97	1					1
17	3	64	2	19	1125	34	45	S	135	3	E	17.9	36.00	1					1
17	3	64	2	19	1200	34	45	S	135	3	E	17.8	35.99	1					1
17	3	64	2	19	1500	34	57	S	135	15	E	18.3	36.06	1					1
17	3	64	2	19	1600	34	57	S	135	27	E	18.3	36.04	1					1
17	3	64	2	19	1700	34	57	S	135	39	E	17.9	36.04	1					1

VESSEL	CRUISE	STATION	YR.	MO.	DAY	TIME	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SWELL	WEA.	VIS.	BAROM.	SAMPLING	METHOD
		NUMBER									DN, AMT.	DN, AMT.	DN, AMT.	DN, AMT.				
17	9	9	64	3	12	1800	33	45 S 134	27 E 17.1	35.81								1
17	9	9	64	3	13	1800	34	39 S 134	31 E 17.3									1
17	9	9	64	3	14	1800	35	33 S 135	9 E 18.3	35.77								1
17	32	32	64	4	28	1800	35	39 S 135	39 E 17.8	35.93								1
17	32	32	64	4	28	1800	35	39 S 135	39 E 18.4	35.90								1
17	32	32	64	4	28	1800	35	39 S 135	39 E 18.2	36.00								1
17	36	36	64	5	5	0900	35	45 S 135	45 E 18.1	35.91								1
17	36	36	64	5	5	1200	35	45 S 135	45 E 17.8	35.81								1
17	36	36	64	5	5	1800	35	51 S 135	33 E 17.7	35.71								1
17	36	36	64	6	5	0900	35	57 S 135	33 E 17.6	35.91								1
17	36	36	64	6	5	1200	35	57 S 135	39 E 17.9	35.88								1
17	36	36	64	6	5	1800	35	9 S 135	37 E 17.7									1
17	36	36	64	6	5	2100	34	45 S 136	3 E 16.9	36.00								1

VESSE - CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND AMT, DN, AMT, SEA SHELL WEA. VIS. BAROM. SAMPLING METHOD

18	64	1	3	0200	37	3 S 149	57 E 18.3	1
18	64	1	3	0400	37	21 S 150	3 E 19.4	1
18	64	1	3	0600	37	39 S 149	57 E 19.4	1
18	64	1	3	0800	37	57 S 149	33 E 19.2	1
18	64	1	3	1000	38	3 S 149	27 E 19.3	1
18	64	1	3	1100	38	3 S 149	15 E 19.7	1
18	64	1	3	1200	38	9 S 149	9 E 20.0	1
18	64	1	3	1300	37	57 S 149	15 E 20.0	1
18	64	1	3	1400	37	51 S 149	33 E 20.3	1
18	64	1	3	1500	37	51 S 149	39 E 20.3	1
18	64	1	3	1600	37	45 S 149	33 E 17.8	1
18	64	1	4	1200	37	45 S 149	33 E 18.3	1
18	64	1	4	1800	37	45 S 149	33 E 18.3	1
18	64	1	5	0800	37	45 S 149	33 E 18.3	1
18	64	1	5	0900	37	45 S 149	27 E 18.9	1
18	64	1	5	1000	38	3 S 149	15 E 19.3	1
18	64	1	5	1100	38	9 S 149	9 E 19.9	1
18	64	1	5	1200	38	9 S 149	9 E 20.1	1
18	64	1	5	1315	38	15 S 149	9 E 20.3	1
18	64	1	5	1500	38	9 S 149	3 E 20.3	1
18	64	1	5	1600	38	3 S 149	3 E 20.4	1
18	64	1	5	1700	38	3 S 148	51 E 20.4	1
18	64	1	5	1800	38	9 S 148	51 E 20.4	1
18	64	1	5	1900	38	3 S 148	45 E 20.0	1
18	64	1	5	1930	38	3 S 148	39 E 20.0	1
18	64	1	6	0700	37	51 S 149	15 E 18.3	1
18	64	1	6	0800	37	57 S 149	15 E 19.2	1
18	64	1	6	0900	38	3 S 149	9 E 19.4	1
18	64	1	6	0930	38	9 S 149	9 E 20.1	1
18	64	1	6	1900	38	3 S 149	27 E 20.6	1
18	64	1	6	2000	37	57 S 149	39 E 20.3	1
18	64	1	7	0200	37	15 S 150	3 E 21.4	1
18	64	1	7	0400	37	3 S 149	57 E 21.4	1
18	64	1	9	0900	38	3 S 149	33 E 19.3	1
18	64	1	9	1000	38	9 S 149	21 E 19.4	1
18	64	1	9	1300	38	9 S 149	21 E 19.4	1
18	64	1	9	1400	38	3 S 149	21 E 19.3	1
18	64	1	9	1600	37	45 S 149	45 E 19.2	1
18	64	2	8	0100	34	45 S 135	57 E 21.1	1
18	64	2	8	0300	34	51 S 136	3 E 20.0	1

VESSEL	CRUISE STATION NUMBER	YR.	MTH.	DAY	TIME Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND DN., AMT.	SEA SWELL DN., AMT.	WEA.	VIS.	BAROM.	SAMPLING METHOD
T8	64	64	2	8	0500	35 9 S	135 45 E	17.8							1
T9	64	64	2	8	0700	35 27 S	135 33 E	18.2							1
T8	64	64	2	8	0900	35 33 S	135 21 E	18.2							1
T9	64	64	2	8	1000	35 39 S	135 9 E	18.5							1
T9	64	64	2	8	1100	35 39 S	135 3 E	18.6							1
T9	64	64	2	8	1200	35 33 S	134 57 E	18.6							1
T8	64	64	2	8	1300	35 33 S	134 51 E	18.9							1
T9	64	64	2	8	1500	35 33 S	134 39 E	19.2							1
T9	64	64	2	8	1700	35 21 S	134 39 E	19.2							1
T9	64	64	2	8	1800	35 21 S	134 33 E	19.2							1
T8	64	64	2	8	1900	35 15 S	134 33 E	19.2							1
T9	64	64	2	8	2300	34 45 S	134 45 E	18.5							1
T8	64	64	2	9	0700	34 39 S	134 45 E	18.2							1
T9	64	64	2	9	0800	34 45 S	134 39 E	18.5							1
T8	64	64	2	9	0900	34 51 S	134 39 E	18.5							1
T8	64	64	2	9	1000	34 51 S	134 39 E	18.5							1
T9	64	64	2	9	1100	34 51 S	134 39 E	18.6							1
T8	64	64	2	9	1200	34 51 S	134 51 E	18.6							1
T8	64	64	2	9	1300	34 51 S	134 51 E	18.6							1
T9	64	64	2	9	1400	34 45 S	134 39 E	18.4							1
T8	64	64	2	9	1500	34 51 S	134 57 E	18.4							1
T8	64	64	2	9	1515	34 51 S	134 57 E	18.4							1
T8	64	64	2	9	1600	34 51 S	135 9 E	18.9							1
T8	64	64	2	9	1700	35 3 S	135 27 E	18.2							1
T8	64	64	2	9	2000	35 9 S	135 45 E	18.2							1
T8	64	64	2	12	0600	35 9 S	135 57 E	18.9							1
T8	64	64	2	12	0900	35 9 S	136 15 E	18.7							1
T8	64	64	2	12	1000	35 9 S	136 15 E	18.9							1
T8	64	64	2	12	1100	35 15 S	136 15 E	18.5							1
T8	64	64	2	12	1200	35 15 S	136 15 E	18.5							1
T8	64	64	2	12	1800	35 21 S	136 9 E	18.3							1
T9	64	64	2	12	1900	35 21 S	136 9 E	18.2							1
T9	64	64	2	13	0001	35 21 S	136 3 E	17.8							1
T8	64	64	2	13	0800	35 15 S	135 51 E	18.1							1
T8	64	64	2	13	1000	35 15 S	135 39 E	17.9							1
T8	64	64	2	13	1100	35 15 S	135 39 E	17.9							1
T8	64	64	2	13	1300	35 33 S	135 27 E	18.2							1
T8	64	64	2	13	1400	35 45 S	135 21 E	18.7							1
T9	64	64	2	13	1800	35 45 S	135 21 E	18.7							1
T8	64	64	2	13	1900	35 39 S	135 33 E	17.9							1

VESSE- CRUISE STATION YR. MTH. DAY TIME / LATITUDE LONGITUDE TEMP. SALINITY WIND DN. AMT, DN, AMT, SEA SWELL WEA. VIS. BAROM, SMELL. WEA. VIS. BAROM, SAMPLING METHOD

18	64	2	13	2345	35	21 S 136	9 E 17.7	1
18	64	2	14	0800	35	21 S 136	9 E 18.2	1
18	64	2	14	1000	35	21 S 136	15 E 18.2	1
18	64	2	14	1100	35	21 S 136	15 E 18.2	1
18	64	2	14	1300	35	21 S 136	9 E 17.9	1
18	64	2	14	1800	35	21 S 136	9 E 17.9	1
18	64	2	15	0500	35	21 S 136	9 E 17.9	1
18	64	2	15	0600	35	9 S 136	3 E 17.9	1
18	64	2	15	0700	34	57 S 136	3 E 16.7	1
18	64	2	17	1800	34	45 S 135	51 E 21.1	1
18	64	2	17	2000	34	57 S 136	3 E 17.2	1
18	64	2	17	2200	35	3 S 135	51 E 18.1	1
18	64	2	17	2400	34	57 S 135	39 E 17.5	1
18	64	2	18	0200	34	15 S 135	3 E 18.1	1
18	64	2	18	0400	34	27 S 134	45 E 18.2	1
18	64	2	18	0600	34	15 S 134	33 E 18.2	1
18	64	2	18	0800	34	3 S 134	21 E 18.3	1
18	64	2	18	1000	34	3 S 134	21 E 18.3	1
18	64	2	18	1200	33	57 S 134	15 E 18.3	1
18	64	2	18	1400	33	57 S 134	3 E 18.3	1
18	64	2	18	1600	34	3 S 134	21 E 18.3	1
18	64	2	18	1700	34	3 S 134	21 E 18.3	1
18	64	2	18	1800	34	15 S 134	15 E 18.3	1
18	64	2	18	2000	34	21 S 134	3 E 18.3	1
18	64	2	19	0200	34	57 S 133	45 E 18.0	1
18	64	2	19	0400	34	57 S 133	39 E 18.1	1
18	64	2	19	0600	34	57 S 133	39 E 19.1	1
18	64	2	19	0700	34	57 S 133	39 E 18.9	1
18	64	2	19	0800	34	57 S 133	51 E 18.9	1
18	64	2	19	0900	35	9 S 133	51 E 18.9	1
18	64	2	19	1000	35	15 S 133	57 E 19.2	1
18	64	2	19	1100	35	21 S 134	9 E 19.2	1
18	64	2	19	1200	35	15 S 134	3 E 19.3	1
18	64	2	19	1300	35	15 S 133	51 E 19.3	1
18	64	2	19	1400	35	21 S 133	51 E 18.8	1
18	64	2	19	1430	35	15 S 133	51 E 19.3	1
18	64	2	19	1700	35	15 S 133	51 E 19.3	1
18	64	2	19	1800	35	21 S 133	57 E 18.9	1
18	64	2	20	0700	35	15 S 133	51 E 18.9	1
18	64	2	20	0800	35	15 S 133	45 E 19.0	1

VESSE - CHUISE STATION YR. MTH. DAY TIME L LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA, VIS. BAROM. SAMPLING METHOD

18	64	2	20	0900	35	9	S	133	45	E	19.0	1
18	64	2	20	1000	35	15	S	133	45	E	19.0	1
18	64	2	20	1100	35	15	S	133	51	E	19.2	1
18	64	2	20	1200	35	9	S	133	57	E	19.3	1
18	64	2	20	1300	35	9	S	133	57	E	19.3	1
18	64	2	20	1400	35	9	S	133	57	E	19.3	1
18	64	2	20	1500	35	9	S	133	57	E	19.3	1
18	64	2	20	1600	35	9	S	134	3	E	19.3	1
18	64	2	20	1700	35	9	S	133	3	E	19.2	1
18	64	2	21	0800	35	9	S	133	51	E	19.2	1
18	64	2	21	0900	35	9	S	133	51	E	19.1	1
18	64	2	21	0915	35	9	S	133	51	E	19.2	1
18	64	2	21	1000	35	15	S	133	45	E	19.4	1
18	64	2	21	1700	35	3	S	133	15	E	20.6	1
18	64	2	21	1800	35	3	S	133	27	E	20.6	1
18	64	2	21	2000	35	3	S	133	51	E	19.4	1
18	64	2	21	2000	35	3	S	133	51	E	19.4	1
18	64	2	21	2400	35	3	S	134	45	E	18.9	1
18	64	2	22	0200	35	3	S	134	57	E	18.3	1
18	64	2	22	0400	35	3	S	135	27	E	18.3	1
18	64	2	22	0600	35	3	S	135	39	E	17.8	1
18	64	2	27	0700	34	45	S	135	51	E	20.6	1
18	64	2	27	0900	34	57	S	136	9	E	17.8	1
18	64	2	27	1100	35	15	S	136	3	E	18.1	1
18	64	2	27	1200	35	21	S	136	9	E	18.4	1
18	64	2	27	1500	35	21	S	136	9	E	18.9	1
18	64	2	27	1600	35	21	S	136	15	E	18.9	1
18	64	2	27	1700	35	21	S	136	15	E	18.9	1
18	64	2	27	1800	35	21	S	136	9	E	18.9	1
18	64	2	28	0800	35	21	S	136	9	E	18.6	1
18	64	2	28	0900	35	21	S	136	9	E	18.9	1
18	64	2	28	1000	35	21	S	136	9	E	18.9	1
18	64	2	28	1030	35	21	S	136	9	E	18.9	1
18	64	3	3	0300	34	57	S	136	3	E	17.8	1
18	64	3	3	0600	35	15	S	135	51	E	18.1	1
18	64	3	3	0900	35	35	S	135	21	E	18.3	1
18	64	3	3	1000	35	39	S	135	15	E	18.7	1
18	64	3	3	1100	35	51	S	135	15	E	18.8	1
18	64	3	3	1200	35	57	S	135	9	E	18.9	1
18	64	3	3	1300	36	3	S	135	21	E	18.9	1
18	64	3	3	1400	36	9	S	135	27	E	18.9	1
18	64	3	3	1500	36	3	S	135	33	E	18.9	1
18	64	3	3	1600	36	9	S	135	45	E	18.9	1

VESSE- CRUISE STATION YR. MTH. DAY TIME & LAITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM. SAMPLING
 NUMBER

18	64	3	3	1700	36	9 S 135	51 E 18.9	1
18	64	3	3	1800	36	9 S 135	51 E 18.9	1
18	64	3	4	0800	36	15 S 135	45 E 18.3	1
18	64	3	4	0900	36	21 S 135	51 E 18.4	1
18	64	3	4	1000	36	21 S 135	51 E 18.4	1
18	64	3	4	1100	36	15 S 135	45 E 18.4	1
18	64	3	4	1200	36	15 S 135	45 E 18.4	1
18	64	3	4	1300	36	15 S 135	45 E 18.5	1
18	64	3	4	1400	36	3 S 135	39 E 18.4	1
18	64	3	4	1500	35	57 S 135	39 E 18.9	1
18	64	3	4	2100	35	21 S 136	9 E 18.1	1
18	64	3	5	0600	35	21 S 136	9 E 17.8	1
18	64	3	9	0200	35	3 S 135	3 E 18.6	1
18	64	3	9	0400	35	9 S 134	39 E 18.6	1
18	64	3	9	0600	35	9 S 134	27 E 18.5	1
18	64	3	9	0800	35	9 S 134	9 E 18.3	1
18	64	3	9	1000	35	9 S 134	3 E 18.6	1
18	64	3	9	1100	35	9 S 134	3 E 18.6	1
18	64	3	9	1200	35	9 S 133	51 E 18.8	1
18	64	3	9	1300	35	3 S 133	51 E 19.0	1
18	64	3	9	1400	35	9 S 133	57 E 19.0	1
18	64	3	9	1500	35	9 S 134	3 E 19.0	1
18	64	3	9	1600	35	3 S 134	15 E 18.6	1
18	64	3	9	1800	34	51 S 134	21 E 18.6	1
18	64	3	9	2100	34	39 S 134	51 E 18.3	1
18	64	3	9	2300	34	39 S 134	51 E 17.7	1
18	64	3	10	0930	34	39 S 134	39 E 17.2	1
18	64	3	10	1100	34	45 S 134	45 E 17.5	1
18	64	3	10	1200	34	51 S 134	45 E 17.5	1
18	64	3	10	1500	35	21 S 134	51 E 18.6	1
18	64	3	10	1600	35	33 S 134	57 E 18.6	1
18	64	3	10	1700	35	45 S 135	9 E 18.3	1
18	64	3	10	1830	35	45 S 135	15 E 18.3	1
18	64	3	11	0600	35	45 S 135	3 E 17.8	1
18	64	3	11	0800	35	51 S 135	9 E 17.8	1
18	64	3	11	0900	35	57 S 135	21 E 17.8	1
18	64	3	11	1000	36	3 S 135	21 E 17.8	1
18	64	3	11	1200	36	3 S 135	27 E 18.3	1
18	64	3	11	1300	36	3 S 135	33 E 18.3	1
18	64	3	11	1400	36	3 S 135	33 E 18.3	1

VESSE-	CRUISE	STATION	YR.	MTH.	DAY	TIME	Z	LAITUDE	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SMELL	WEA.	VIS.	BAROM.	SAMPLING
		NUMBER										DN. AMT.	DN. AMT.	DN. AMT.				METHOD
18	64	3	11	1500	36	9	S	135	33	E	18.2							1
18	64	3	11	1600	36	15	S	135	39	E	18.1							1
18	64	3	11	1845	36	15	S	135	39	E	17.8							1
18	64	3	11	2000	36	21	S	135	33	E	17.8							1
18	64	3	12	0800	36	21	S	135	33	E	17.4							1
18	64	3	12	0930	36	21	S	135	39	E	18.0							1
18	64	3	12	1030	36	27	S	135	45	E	18.1							1
18	64	3	12	1200	36	33	S	135	51	E	17.8							1
18	64	3	12	1300	36	39	S	136	9	E	18.1							1
18	64	3	12	1400	36	45	S	136	15	E	18.3							1
18	64	3	12	1500	36	39	S	136	9	E	18.1							1
18	64	3	12	1800	36	33	S	135	51	E	17.9							1
18	64	3	12	1900	36	21	S	135	57	E	17.9							1
18	64	3	12	2400	35	33	S	135	57	E	17.8							1
18	64	3	15	0800	36	9	S	135	57	E	17.8							1
18	64	3	15	0930	36	27	S	135	57	E	17.8							1
18	64	3	15	1000	36	27	S	135	57	E	17.8							1
18	64	3	15	1100	36	27	S	136	3	E	18.3							1
18	64	3	15	1200	36	33	S	136	9	E	18.3							1
18	64	3	15	1400	36	27	S	135	57	E	18.3							1
18	64	3	15	1600	36	27	S	135	45	E	18.3							1
18	64	3	15	1730	36	27	S	135	45	E	18.3							1
18	64	3	15	2400	35	21	S	136	9	E	16.9							1
18	64	3	16	1200	36	9	S	135	51	E	18.6							1
18	64	3	16	1300	36	21	S	135	39	E	18.9							1
18	64	3	16	1500	36	27	S	136	9	E	18.3							1
18	64	3	16	1630	36	33	S	136	21	E	18.3							1
18	64	3	16	1700	36	33	S	136	21	E	18.3							1
18	64	3	16	1830	36	33	S	136	3	E	17.8							1
18	64	3	17	0745	36	33	S	136	3	E	17.8							1
18	64	3	17	0900	36	15	S	135	51	E	18.4							1
18	64	3	17	1200	36	3	S	135	27	E	18.3							1
18	64	3	17	1300	36	3	S	135	21	E	18.3							1
18	64	3	17	1400	35	57	S	135	21	E	18.6							1
18	64	3	17	1600	35	51	S	135	21	E	18.5							1
18	64	3	17	1700	35	45	S	135	15	E	18.9							1
18	64	3	17	1830	35	39	S	135	9	E	18.9							1
18	64	3	18	0700	35	39	S	135	9	E	17.8							1
18	64	3	18	0730	35	39	S	135	15	E	17.9							1
18	64	3	18	1000	35	39	S	135	15	E	18.4							1

VESSE - CRUISE STATION YR. M/H. DAY TIME & LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL MEA. VIS. BARDM. SAMPLING METHOD

18	64	4	21	0400	34	33 S	136	3 E	17.8	1
18	64	4	21	0600	34	33 S	136	3 E	17.8	1
18	64	4	21	1200	35	21 S	135	57 E	17.8	1
18	64	4	21	1500	35	45 S	135	57 E	18.1	1
18	64	4	21	1600	35	57 S	135	45 E	17.8	1
18	64	4	21	1700	36	3 S	135	45 E	17.8	1
18	64	4	21	1730	36	15 S	135	51 E	17.5	1
18	64	4	22	0600	36	15 S	135	51 E	17.2	1
18	64	4	22	0800	36	15 S	135	51 E	17.2	1
18	64	4	22	1200	36	21 S	135	57 E	17.8	1
18	64	4	22	1300	36	27 S	135	51 E	17.8	1
18	64	4	22	1400	36	33 S	135	45 E	18.1	1
18	64	4	22	1500	36	33 S	135	45 E	17.8	1
18	64	4	22	1600	36	39 S	135	39 E	18.3	1
18	64	4	22	1700	36	45 S	135	33 E	17.8	1
18	64	4	22	1730	36	45 S	135	33 E	17.5	1

VESSEL	CRUISE STATION NUMBER	YR.	MTH.	DAY	TIME	Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND DN. AMT.	SEA DN. AMT.	SWELL DN. AMT.	WEA.	VIS.	BAROM.	SAMPLING METHOD
U5	64	1	3	0545	K	36	51 S	150	15 E	18.9	23	1					1
U5	64	1	3	0730	K	36	51 S	150	09 E	18.9	23	1					1
U5	64	1	3	0915	K	36	39 S	150	09 E	19.4	18	1					1
U5	64	1	3	1045	K	36	39 S	150	09 E	19.4	14	1					1
U5	64	1	3	1200	K	36	39 S	150	09 E	19.4	14	2					1
U5	64	1	3	1345	K	36	39 S	150	09 E	19.4	14	2					1
U5	64	1	3	1530	K	36	39 S	150	09 E	19.4	14	2					1
U5	64	1	4	0445	K	36	39 S	150	09 E	19.4	18	2					1
U5	64	1	4	0615	K	36	39 S	150	09 E	19.4	18	2					1
U5	64	1	4	0745	K	36	39 S	150	09 E	19.4	18	2					1
U5	64	1	4	0915	K	36	39 S	150	09 E	19.4	18	2					1
U5	64	1	6	0600	K	37	51 S	149	57 E	19.4	36	2					1
U5	64	1	6	0730	K	37	51 S	149	57 E	19.4	36	1					1
U5	64	1	6	0845	K	37	51 S	149	57 E	19.4	36	1					1
U5	64	1	6	1030	K	37	51 S	149	57 E	19.4	36	1					1
U5	64	1	6	1200	K	37	51 S	149	57 E	19.4	36	1					1
U5	64	1	6	1330	K	37	51 S	149	57 E	19.4	36	1					1
U5	64	1	6	1445	K	37	51 S	149	57 E	19.4	36	1					1
U5	64	1	6	1600	K	37	51 S	149	57 E	19.4	36	1					1
U5	64	1	9	0445	K	37	51 S	149	57 E	19.4	36	1					1
U5	64	1	9	0630	K	37	51 S	149	57 E	19.4	36	1					1
U5	64	1	9	0800	K	37	51 S	149	57 E	19.4	36	1					1
U5	64	1	9	0930	K	37	51 S	149	57 E	19.4	36	1					1
U5	64	1	9	1045	K	37	51 S	149	57 E	19.4	23	2					1
U5	64	1	9	1200	K	37	51 S	149	57 E	19.4	23	3					1
U5	64	1	12	0445	K	37	51 S	149	57 E	18.9	05	2					1
U5	64	1	12	0645	K	37	51 S	149	57 E	18.9	05	3					1
U5	64	1	12	0815	K	37	51 S	149	57 E	18.9	05	4					1
U5	64	1	13	0545	K	37	51 S	149	57 E	19.2	36	1					1
U5	64	1	13	0900	K	37	51 S	149	57 E	19.2	36	1					1
U5	64	1	13	1300	K	37	51 S	149	57 E	19.2	05	2					1
U5	64	1	13	1445	K	37	51 S	149	57 E	19.2	05	2					1
U5	64	1	15	0600	K	36	57 S	150	09 E	19.2	23	1					1
U5	64	1	15	0830	K	36	57 S	150	09 E	19.2	23	1					1
U5	64	1	15	1000	K	36	57 S	150	03 E	19.2	23	3					1
U5	64	1	15	1300	K	36	57 S	150	03 E	19.2	23	3					1
U5	64	1	17	0600	K	36	57 S	149	57 E	17.2	32	1					1
U5	64	1	17	0800	K	36	57 S	149	57 E	19.2	00	0					1
U5	64	1	17	0945	K	36	57 S	150	03 E	19.2	05	1					1
U5	64	1	17	1130	K	36	57 S	150	09 E	19.2	05	1					1

VESSE-	CRUISE	STATION	YR.	MTH.	DAY	TIME	◊	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SWELL	WEA.	VIS.	BAROM.	SAMPLING
		NUMBER										UN. AMT.	DN. AMT.	DN. AMT.				METHOD
U5		64	1	20	0545	K	38	03 S	149	57 E	18.3	18	1					1
U5		64	1	20	0700	K	38	03 S	149	57 E	18.3	18	1					1
U5		64	1	20	0815	K	38	03 S	149	57 E	18.3	18	1					1
U5		64	1	20	0930	K	38	03 S	149	57 E	18.3	18	1					1
U5		64	1	20	1115	K	38	03 S	149	57 E	18.3	32	1					1
U5		64	1	22	0745	K	37	51 S	149	57 E	17.8	32	1					1
U5		64	1	22	0915	K	38	15 S	149	09 E	17.8	18	1					1
U5		64	1	23	0445	K	38	15 S	149	09 E	17.8	18	1					1
U5		64	1	23	0615	K	38	15 S	149	09 E	17.8	18	1					1
U5		64	1	23	0730	K	38	15 S	149	09 E	17.8	18	1					1
U5		64	1	23	1245	K	38	21 S	148	33 E	17.8	18	1					1
U5		64	1	23	1400	K	38	21 S	148	33 E	17.8	18	1					1
U5		64	1	23	1530	K	38	15 S	148	51 E	17.8	18	1					1
U5		64	1	23	1715	K	38	15 S	148	51 E	17.8	18	1					1
U5		64	1	23	1845	K	38	15 S	148	51 E	17.8	18	1					1
U5		64	1	23	2000	K	38	15 S	148	51 E	17.8	18	1					1
U5		64	1	23	2145	K	38	15 S	148	51 E	17.8	18	1					1
U5		64	1	23	2315	K	38	15 S	148	51 E	17.8	05	1					1
U5		64	1	24	0500	K	38	15 S	148	51 E	17.8	05	1					1
U5		64	1	24	0630	K	38	15 S	148	51 E	17.8	05	1					1
U5		64	1	24	0800	K	38	15 S	148	51 E	17.8	05	1					1
U5		64	2	12	0615	K	36	45 S	150	03 E	19.4	36	1					1
U5		64	2	12	0745	K	36	45 S	150	03 E	19.4	05	1					1
U5		64	2	12	0930	K	36	45 S	150	03 E	19.4	05	1					1
U5		64	2	12	1100	K	36	45 S	150	03 E	19.4	05	1					1
U5		64	2	17	0645	K	36	51 S	150	03 E	21.4	32	1					1
U5		64	2	17	0800	K	36	51 S	150	03 E	21.4	32	1					1

VESSEL CRUISE STATION YR. MTH. DAY TIME & LATITUDE LONGITUDE TEMP. SALINITY WIND DN, AMT. SEA SWELL WEA. VIS. BAROM. SAMPLING METHOD

MB	64	1	20	0630	35	15 S	135	45 E	18.3	1
MB	64	1	20	0800	35	15 S	135	45 E	18.3	1
MB	64	1	20	1600	35	3 S	135	45 E	17.8	1
MB	64	1	22	1430	35	27 S	134	45 E	18.9	1
MB	64	1	22	1730	35	27 S	134	45 E	18.3	1
MB	64	1	22	0800	35	15 S	135	39 E	18.1	1
MB	64	1	24	0800	34	51 S	135	21 E	18.3	1
MB	64	1	24	1300	34	45 S	135	3 E	18.9	1
MB	64	1	24	1400	34	45 S	135	3 E	18.9	1
MB	64	1	24	1500	34	51 S	135	21 E	18.3	1
MB	64	1	27	0800	35	15 S	135	45 E	17.8	1
MB	64	1	27	1100	35	27 S	135	33 E	18.3	1
MB	64	1	27	1300	35	33 S	134	51 E	18.3	1
MB	64	1	27	1400	35	39 S	134	45 E	18.3	1
MB	64	1	27	1700	35	27 S	134	21 E	17.8	1
MB	64	1	28	0800	35	39 S	135	3 E	18.3	1
MB	64	1	28	1300	35	15 S	134	51 E	18.9	1
MB	64	1	28	1700	34	45 S	135	9 E	19.2	1
MB	64	1	28	1900	34	45 S	135	9 E	19.2	1
MB	64	2	3	0800	35	9 S	136	3 E	16.7	1
MB	64	2	3	1000	35	3 S	135	57 E	17.2	1
MB	64	2	3	1100	34	57 S	135	51 E	18.9	1
MB	64	2	3	1200	34	57 S	135	51 E	18.9	1
MB	64	2	3	1800	34	57 S	135	51 E	18.9	1
MB	64	2	5		34	39 S	134	45 E	17.8	1
MB	64	2	5		34	45 S	134	39 E	18.3	1
MB	64	2	6		34	45 S	135	3 E	17.4	1
MB	64	2	8	0800	35	9 S	136	3 E	17.5	1
MB	64	2	8	1100	35	21 S	136	9 E	18.3	1
MB	64	2	8	1400	35	21 S	136	9 E	18.3	1
MB	64	2	8	1600	35	21 S	136	9 E	18.3	1
MB	64	2	8	1800	35	21 S	136	9 E	18.9	1
MB	64	2	9	0900	35	15 S	136	15 E	18.3	1
MB	64	2	9	1100	35	15 S	136	21 E	18.3	1
MB	64	2	17	1000	34	45 S	135	3 E	17.8	1
MB	64	2	17	1300	34	51 S	134	39 E	17.2	1
MB	64	2	17	1600	34	51 S	134	39 E	17.2	1
MB	64	2	18	0800	34	51 S	134	39 E	16.7	1
MB	64	2	18	1100	34	45 S	135	3 E	16.9	1

VESSE -	CRUISE	STATION	YR.	MTH.	DAY	TIME	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SWELL	WEA.	VIS.	BAROM.	SAMPLING
		NUMBER								DN, AMT.	DN, AMT.	DN, AMT.				METHOD
H8		64	2	18	1500	34	51 S	135	15 E	16.9						1
H8		64	2	18	1800	34	51 S	135	15 E	16.9						1
H8		64	2	20	1100	35	15 S	135	45 E	17.2						1
H8		64	2	20	1600	35	39 S	135	9 E	18.1						1
H8		64	2	21	0700	35	33 S	134	45 E	19.2						1
H8		64	2	21	0800	35	27 S	134	33 E	19.2						1
H8		64	2	21	1000	35	39 S	134	57 E	19.2						1
H8		64	2	21	1400	35	27 S	134	27 E	19.2						1
H8		64	2	21	1700	35	21 S	134	15 E	19.2						1
H8		64	2	23	0800	35	51 S	135	33 E	19.2						1
H8		64	2	25	1300	35	51 S	135	33 E	19.2						1
H8		64	2	25	1300	35	51 S	135	33 E	19.2						1
H8		64	3	1	0800	35	39 S	135	9 E	17.5						1
H8		64	3	1	1000	35	39 S	135	9 E	17.5						1
H8		64	3	12	0900	35	39 S	135	9 E	18.9						1
H8		64	3	12	1400	35	57 S	135	21 E	19.2						1
H8		64	3	13	1800	35	57 S	135	21 E	19.2						1
H8		64	3	15	0900	35	39 S	134	51 E	18.3						1
H8		64	3	15	1000	35	39 S	134	51 E	18.3						1
H8		64	3	15	1500	35	39 S	134	39 E	18.1						1
H8		64	3	15	1700	35	39 S	134	39 E	18.1						1
H8		64	3	26	1600	35	39 S	135	9 E	18.9						1
H8		64	3	26	1800	35	39 S	135	9 E	18.9						1
H8		64	3	27	0800	35	39 S	135	9 E	18.3						1
H8		64	3	27	1000	35	39 S	135	9 E	18.3						1
H8		64	4	1	0800	35	33 S	134	45 E	16.7						1
H8		64	4	1	1000	35	33 S	134	45 E	16.7						1
H8		64	4	1	1200	35	33 S	134	45 E	16.7						1
H8		64	4	7	0900	35	39 S	135	9 E	17.2						1
H8		64	4	7	1000	35	39 S	135	9 E	17.2						1
H8		64	4	7	1100	35	39 S	135	3 E	17.2						1
H8		64	4	12	0700	35	27 S	134	27 E	18.3						1
H8		64	4	12	0800	35	27 S	134	27 E	18.3						1
H8		64	4	12	0900	35	27 S	134	27 E	18.3						1
H8		64	4	12	1200	35	45 S	134	21 E	17.2						1
H8		64	4	12	1400	35	51 S	134	27 E	16.7						1
H8		64	4	12	1700	35	51 S	134	33 E	16.9						1
H8		64	4	12	1730	35	51 S	134	33 E	16.9						1
H8		64	4	20	0800	35	15 S	135	45 E	17.2						1
H8		64	4	21	0600	35	51 S	134	57 E	18.1						1

VESSE- CRUISE STATION YR. MTH. DAY TIME / LATITUDE LONGITUDE TEMP. SALINITY WIND DN, AMT. SEA SWELL WEA. VIS. BAROM. SAMPLING METHOD

W8	64	4	21	0615	35	51	S	134	57	E	18.1								1
W8	64	4	21	0800	35	51	S	134	57	E	18.1								1
W8	64	4	21	1500	35	57	S	134	45	E	17.2								1
W8	64	4	21	1600	35	57	S	134	45	E	17.2								1

VESSEL	CRUISE NUMBER	STATION YR.	MTM.	DAY	TIME	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND DN. AMT.	SEA DN. AMT.	SMELL DN. AMT.	WEA.	VIS.	BAROM.	SAMPLING METHOD
W9	64	1	3	0930	34	57 S	135	57 E	17.8							1
W9	64	1	3	1200	34	39 S	134	45 E	17.8							1
W9	64	1	22	1400	35	27 S	134	45 E	18.9							1
W9	64	1	22	1730	35	27 S	134	57 E	18.3							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