

OCEANOGRAPHICAL STATION LIST

VOLUME 58

TEMPERATURE OBSERVATIONS FROM AUSTRALIAN
TUNA FISHING VESSELS IN 1961

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

CSIRO AUST. OCEANOGR.

OCEANOGRAPHICAL STATION LIST

VOLUME 58

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AUSTRALIA

MELBOURNE, 1968

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When citing this station list, abbreviate as follows:
CSIRO Aust. Oceanogr. Stn List 58.

OCEANOGRAPHICAL STATION LIST

VOLUME 58

Temperature Observations from Australian Tuna Fishing Vessels in 1961

I. INTRODUCTION

In 1961 a programme for the systematic measurement of seawater 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 Eastern Australian tuna fishing grounds during 1961.

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.

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. 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.)
- 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 crews 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
SURFACE TEMPERATURES

EXPLANATION OF HEADINGS

VESSEL	A code number is given for each vessel:	
	55 <u>Gondwana</u>	X5 <u>Ajax</u>
	T1 <u>Favorite</u>	X6 <u>Una Voce</u>
	U5 <u>Mirrabooka</u>	X9 <u>Gladiator</u>
	U8 <u>St Michelle</u>	Y1 <u>Hunter</u>
	W2 <u>Eden Star</u>	Y2 <u>Gipsy</u>
	W9 <u>Challenge</u>	Y3 <u>Allanwood</u>
	X4 <u>Kembla</u>	
CRUISE STATION NUMBER	Generally assigned only when a member of CSIRO staff accompanied the cruise	
TIME	All times are given in Eastern Australian Standard Time, GMT +10 hr, Code K	
LATITUDE LONGITUDE	Given in degrees and minutes	
TEMP.	Sea surface temperatures recorded in °C	
SALINITY	No samples were taken by fishing vessels during 1961	

A blank indicates no data available

VESSEL CRUISE STATION YR. MH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT, DN. AMT. DN. AMT.

55	1	1	61	4	18	0045	K 42	50	S 147	58	E	16.6
55	1	2	61	4	18	0720	K 42	50	S 147	58	E	16.6
55	1	3	61	4	19	0430	K 42	34	S 148	04	E	16.1
55	1	4	61	4	19	0810	K 42	34	S 148	04	E	16.6
55	1	5	61	4	20	0210	K 42	33	S 148	00	E	16.1
55	1	6	61	4	20	1110	K 42	33	S 148	00	E	16.2
55	1	7	61	4	21	1325	K 42	21	S 148	13	E	17.0
55	1	8	61	4	21	1713	K 42	21	S 148	13	E	17.2
55	1	9	61	4	22	0003	K 42	21	S 148	13	E	16.8
55	1	10	61	4	23	1015	K 42	16	S 148	22	E	16.5
55	1	11	61	4	25	0817	K 42	33	S 148	04	E	16.4
55	1	12	61	4	26	1740	K 43	08	S 148	02	E	15.8
55	1	13	61	4	27	0525	K 43	08	S 148	02	E	15.8
55	1	14	61	4	27	0855	K 43	08	S 148	02	E	15.5
55	1	15	61	4	28	0525	K 43	12	S 147	54	E	15.2
55	1	16	61	4	28	0855	K 43	12	S 147	54	E	15.2
55	1	17	61	4	29	0450	K 42	43	S 148	01	E	15.7
55	1	18	61	4	29	0857	K 42	43	S 148	01	E	16.0
55	1	19	61	4	29	1445	K 42	34	S 148	04	E	16.2
55	1	20	61	4	29	1747	K 42	34	S 148	04	E	16.1

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

11	61	8	23	2100	36	51	S	150	3	E	12.2								
11	61	8	24	0000	36	15	S	150	3	E	13.9								
11	61	8	24	0300	35	45	S	150	21	E	15.6								
11	61	8	24	0600	35	21	S	150	33	E	15.0								
11	61	8	24	0900	35	9	S	150	39	E	15.3								
11	61	8	24	1100	35	3	S	150	45	E	14.2								
11	61	8	28	0900	34	57	S	151	9	E	15.3								
11	61	8	28	1100	34	45	S	151	9	E	15.4								
11	61	8	28	1300	34	21	S	151	21	E	15.6								
11	61	8	28	1500	34	15	S	151	21	E	15.6								
11	61	9	5	0700	33	51	S	151	21	E	15.0								
11	61	9	5	0900	33	57	S	151	27	E	16.1								
11	61	9	5	1100	34	3	S	151	33	E	16.1								
11	61	9	5	1300	34	27	S	151	27	E	16.7								
11	61	9	5	1500	34	45	S	151	15	E	15.6								
11	61	9	5	1700	34	57	S	151	9	E	15.0								
11	61	9	7	0745	35	3	S	150	51	E	14.4								
11	61	9	7	0900	35	3	S	151	15	E	14.7								
11	61	9	7	1100	35	3	S	150	51	E	14.4								
11	61	9	8	0900	35	3	S	150	51	E	15.0								
11	61	9	8	1100	34	57	S	151	15	E	16.1								
11	61	9	8	1300	35	3	S	150	51	E	15.0								
11	61	9	9	0700	35	3	S	150	51	E	14.4								
11	61	9	9	0900	34	57	S	151	15	E	15.8								
11	61	9	9	1100	34	45	S	151	21	E	16.7								
11	61	9	9	1300	35	3	S	151	15	E	16.1								
11	61	9	13	0700	35	3	S	150	51	E	15.0								
11	61	9	13	0900	34	57	S	151	15	E	16.4								
11	61	9	13	1100	34	39	S	151	21	E	16.1								
11	61	9	13	1300	34	33	S	151	15	E	16.1								
11	61	9	13	1500	34	33	S	150	57	E	15.0								
11	61	9	13	1930	34	33	S	150	57	E	15.0								
11	61	9	14	0700	34	33	S	151	15	E	15.8								
11	61	9	14	0900	34	57	S	151	15	E	16.2								
11	61	9	14	1100	35	3	S	150	51	E	15.6								
11	61	9	15	1100	35	3	S	150	51	E	15.3								
11	61	9	19	0700	35	3	S	151	3	E	15.6								
11	61	9	19	0900	34	51	S	151	15	E	16.5								
11	61	9	19	1100	34	39	S	151	15	E	16.9								
11	61	9	19	1300	34	21	S	151	21	E	16.4								

VESSEL	CRUISE	STATION	YR.	MIN.	DAY	TIME	Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SWELL	WEA.	VIS.	BAROM.
		NUMBER										DN. AMT.	DN. AMT.	DN. AMT.			

11			61	9	20	0700		34	3 S 151	39 E	19.0						
11			61	9	20	0900		34	3 S 151	33 E	17.2						
11			61	9	20	1100		33	57 S 151	33 E	19.2						
11			61	9	20	1300		33	51 S 151	21 E	19.7						
11			61	9	21	0900		34	21 S 151	27 E	17.1						
11			61	9	21	1300		34	39 S 151	15 E	16.7						
11			61	9	22	0700		35	3 S 150	45 E	14.4						

VESSEL CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT; DN. AMT. DN. AMT.

U5	61	8	12		36	39	S	150	09	E	15.3						
U5	61	8	13	1300	36	39	S	150	09	E	15.8						
U5	61	8	14	1100	36	45	S	150	09	E	15.3						
U5	61	8	20		37	27	S	150	09	E	13.9						
U5	61	8	21		37	03	S	150	09	E	14.7						
U5	61	8	28	1200	37	03	S	150	09	E	14.7						
U5	61	8	29		36	57	S	150	03	E	14.4						
U5	61	8	30		37	15	S	150	09	E	12.8						
U5	61	8	31		37	09	S	150	15	E	13.9						
U5	61	9	1	1200	37	09	S	150	15	E	14.2						
U5	61	9	4		37	03	S	150	09	E	13.6						
U5	61	9	5		37	09	S	150	15	E	14.4						
U5	61	9	6		37	03	S	150	21	E	14.2						
U5	61	9	7		37	03	S	150	15	E	13.9						
U5	61	9	8		37	15	S	150	09	E	13.3						
U5	61	9	9		36	51	S	150	03	E	12.8						
U5	61	9	10		37	15	S	150	09	E	12.8						
U5	61	9	12		36	45	S	150	03	E	12.8						
U5	61	9	13		36	45	S	150	03	E	13.2						
U5	61	9	13		36	39	S	150	03	E	13.9						
U5	61	9	14		36	57	S	150	03	E	13.3						
U5	61	9	19		37	15	S	150	09	E	14.3						
U5	61	9	20		36	57	S	150	03	E	12.8						
U5	61	9	21		36	51	S	150	09	E	13.9						
U5	61	9	22		36	57	S	150	03	E	13.9						
U5	61	9	23		37	03	S	150	03	E	13.9						
U5	61	9	24		37	21	S	150	03	E	13.3						
U5	61	9	28		37	15	S	150	09	E	12.8						
U5	61	9	29		37	15	S	150	09	E	13.5						
U5	61	9	30		37	09	S	150	15	E	14.4						
U5	61	10	3		37	09	S	150	15	E	15.3						
U5	61	10	4		37	09	S	150	15	E	13.9						
U5	61	10	5		37	15	S	150	09	E	14.4						
U5	61	10	6		37	09	S	150	21	E	15.3						
U5	61	10	7		37	15	S	150	09	E	14.4						
U5	61	10	13		37	09	S	150	21	E	15.8						
U5	61	10	14		37	03	S	150	09	E	15.6						
U5	61	10	16		37	03	S	150	21	E	17.8						
U5	61	10	19		37	21	S	150	15	E	15.8						
U5	61	10	22		37	21	S	150	09	E	15.0						

VESSEL CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NJMNR DN. AMT. DN. AMT. DN. AMT.

U5	61	10	23	37	15	S	150	09	E	15.0
U5	61	10	27	37	15	S	150	09	E	14.4
U5	61	10	28	37	09	S	150	15	E	14.7
U5	61	10	29	37	21	S	150	09	E	14.4
U5	61	10	30	37	27	S	150	09	E	15.0
U5	61	10	31	37	27	S	150	09	E	15.0
U5	61	11	4	37	15	S	150	09	E	15.6
U5	61	11	5	37	15	S	150	09	E	16.7
U5	61	11	8	37	21	S	150	09	E	15.6
U5	61	11	9	37	09	S	150	09	E	15.0
U5	61	11	10	37	09	S	150	09	E	15.8
U5	61	11	12	37	09	S	150	09	E	15.6
U5	61	11	13	37	09	S	150	15	E	15.8
U5	61	11	17	37	09	S	150	15	E	15.8

VESSEL CRUISE STATION YR. MH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BARO
 NUMBER DN. AMT. DN. AMT. DN. AMT.

08	61	8	12	1730	35	33 S	150	27	E	13.3									
08	61	8	13	1730	35	3 S	150	45	E	14.4									
08	61	8	14	0900	35	3 S	151	15	E	17.5									
08	61	8	14	1100	34	57 S	151	15	E	17.2									
08	61	8	14	1300	35	3 S	151	3	E	17.5									
08	61	8	14	1800	35	3 S	150	45	E	14.4									
08	61	8	17	1800	35	3 S	150	45	E	15.0									
08	61	8	18	1800	35	3 S	150	45	E	15.0									
08	61	8	19	1800	35	3 S	150	45	E	15.0									
08	61	8	20	0900	34	33 S	151	21	E	16.4									
08	61	8	20	1100	34	27 S	151	27	E	16.4									
08	61	8	20	1300	34	39 S	151	15	E	16.4									
08	61	8	20	1500	34	57 S	151	9	E	16.7									
08	61	8	20	1700	35	9 S	150	57	E	16.7									
08	61	8	23	0700	35	33 S	150	45	E	16.1									
08	61	8	23	0800	35	39 S	150	51	E	16.1									
08	61	8	23	0900	35	33 S	150	51	E	15.8									
08	61	8	23	1100	35	15 S	150	57	E	15.8									
08	61	8	23	1300	35	15 S	150	33	E	15.0									
08	61	8	29	0900	35	15 S	150	51	E	14.4									
08	61	8	29	1000	35	15 S	150	57	E	15.3									
08	61	8	29	1100	35	9 S	151	3	E	15.3									
08	61	8	29	1200	35	9 S	151	9	E	15.3									
08	61	8	29	1300	35	9 S	151	9	E	15.3									
08	61	8	30	1000	34	57 S	151	9	E	15.3									
08	61	8	30	1100	34	51 S	151	9	E	15.0									
08	61	8	30	1200	34	45 S	151	9	E	15.0									
08	61	8	30	1300	34	39 S	151	15	E	15.8									
08	61	8	30	1400	34	27 S	151	21	E	15.8									
08	61	8	30	1500	34	21 S	151	27	E	16.1									
08	61	9	1	0700	34	39 S	151	3	E	15.3									
08	61	9	1	0800	34	45 S	151	9	E	15.3									
08	61	9	1	0900	34	57 S	151	9	E	15.3									
08	61	9	1	1000	34	57 S	151	15	E	15.0									
08	61	9	1	1100	35	3 S	151	15	E	15.3									
08	61	9	1	1200	35	3 S	151	15	E	15.3									
08	61	9	1	1300	35	9 S	151	3	E	15.0									
08	61	9	2	0600	35	3 S	150	45	E	15.0									
08	61	9	20	0800	34	15 S	151	27	E	16.9									
08	61	9	20	0900	34	21 S	151	21	E	16.7									

VESSEL CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

UB	61	9	20	1100	34	33	S	151	21	E	17.2
UB	61	9	20	1200	34	33	S	151	27	E	17.2
UB	61	9	20	1300	34	39	S	151	9	E	16.7
UB	61	9	21	0600	34	27	S	151	9	E	16.4
UB	61	9	21	0700	34	27	S	151	21	E	16.9
UB	61	9	21	0900	34	15	S	151	33	E	17.2
UB	61	9	21	0930	34	15	S	151	33	E	18.3
UB	61	9	21	1100	34	21	S	151	27	E	17.2
UB	61	9	21	1300	34	39	S	151	15	E	17.5
UB	61	9	21	1400	34	51	S	151	9	E	17.2
UB	61	9	21	1500	34	57	S	151	9	E	17.2
UB	61	9	22	0800	35	3	S	151	3	E	15.3
UB	61	9	22	0900	34	57	S	151	9	E	16.4
UB	61	9	22	1100	34	51	S	151	15	E	16.4
UB	61	9	22	1300	35	3	S	151	21	E	17.5
UB	61	9	22	1500	35	3	S	150	57	E	16.1
UB	61	9	23	0730	35	3	S	150	51	E	15.0
UB	61	9	23	0900	34	51	S	151	9	E	15.8
UB	61	9	23	1100	34	45	S	151	15	E	17.2
UB	61	9	23	1200	34	33	S	151	21	E	17.8
UB	61	9	23	1215	34	33	S	151	21	E	18.3
UB	61	9	23	1300	34	33	S	151	15	E	17.2
UB	61	9	24	0800	34	39	S	151	3	E	16.4
UB	61	9	24	0900	34	39	S	151	9	E	17.2
UB	61	9	24	1000	34	33	S	151	15	E	18.3
UB	61	9	24	1100	34	27	S	151	21	E	18.3
UB	61	9	24	1200	34	21	S	151	21	E	17.5
UB	61	9	25	0900	34	15	S	151	27	E	18.3
UB	61	9	25	1100	34	27	S	151	21	E	17.2
UB	61	9	25	1300	34	21	S	151	21	E	18.3
UB	61	9	25	1400	34	33	S	151	9	E	17.2
UB	61	9	28	0400	34	33	S	150	57	E	15.6
UB	61	9	28	0600	34	21	S	151	15	E	18.1
UB	61	9	28	0700	34	21	S	151	21	E	18.6
UB	61	9	28	0800	34	27	S	151	21	E	18.9
UB	61	9	28	0900	34	27	S	151	21	E	18.9
UB	61	9	28	1100	34	45	S	151	9	E	17.2
UB	61	9	28	1200	34	45	S	150	57	E	15.8
UB	61	9	29	0600	34	51	S	150	51	E	15.6
UB	61	9	29	0700	34	51	S	151	3	E	16.1

VESSE- CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

U8	61	9	29	0800	34	51	S	151	9	E	18.1						
U8	61	9	29	0900	34	45	S	151	9	E	18.6						
U8	61	9	29	1100	34	33	S	151	15	E	18.3						
U8	61	9	29	1300	34	33	S	151	15	E	18.9						
U8	61	9	29	1500	34	39	S	151	9	E	19.4						
U8	61	9	29	1600	34	45	S	151	9	E	19.4						
U8	61	9	29	1700	34	45	S	151	9	E	19.4						
U8	61	9	29	1800	34	45	S	151	3	E	18.3						
U8	61	9	30	0615	34	33	S	150	57	E	15.6						
U8	61	9	30	0700	34	33	S	151	3	E	16.9						
U8	61	9	30	0800	34	33	S	151	9	E	18.3						
U8	61	9	30	0900	34	39	S	151	9	E	19.2						
U8	61	9	30	1100	34	51	S	151	9	E	18.9						
U8	61	9	30	1300	34	57	S	151	9	E	20.0						
U8	61	10	1	0500	35	9	S	150	39	E	15.6						
U8	61	10	1	0700	35	9	S	150	45	E	15.6						
U8	61	10	1	0900	35	3	S	151	9	E	17.5						
U8	61	10	1	1100	35	3	S	151	3	E	16.7						
U8	61	10	2	0900	35	9	S	151	9	E	17.2						
U8	61	10	2	1100	35	9	S	151	9	E	17.8						
U8	61	10	2	1245	35	3	S	151	15	E	20.0						
U8	61	10	2	1300	34	57	S	151	9	E	20.0						
U8	61	10	3	0530	35	3	S	150	45	E	16.4						
U8	61	10	3	0700	35	15	S	150	39	E	15.8						
U8	61	10	3	0900	35	21	S	150	33	E	16.4						
U8	61	10	3	1000	35	21	S	150	33	E	16.4						
U8	61	10	3	1100	35	21	S	150	33	E	16.4						
U8	61	10	3	1200	35	21	S	150	33	E	16.4						
U8	61	10	3	1300	35	21	S	150	33	E	16.7						
U8	61	10	4	0700	35	21	S	150	33	E	16.4						
U8	61	10	4	0900	35	21	S	150	45	E	16.4						
U8	61	10	4	1100	35	21	S	150	33	E	16.4						
U8	61	10	4	1200	35	21	S	150	33	E	16.4						
U8	61	10	4	1300	35	21	S	150	33	E	16.7						
U8	61	10	4	1445	35	21	S	150	33	E	16.9						
U8	61	10	5	0700	35	27	S	150	33	E	16.4						
U8	61	10	5	1100	35	27	S	150	33	E	16.4						
U8	61	10	5	1130	35	27	S	150	33	E	16.4						
U8	61	10	5	1300	35	27	S	150	33	E	16.9						
U8	61	10	6	0200	35	27	S	150	27	E	16.4						

VESSEL CRUISE STATION YR. MTH. DAY TIME \angle LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

U8	61	10	7	0900	35	21 S	150	45 E	18.9										
U8	61	10	7	1100	35	27 S	150	45 E	18.6										
U8	61	10	7	1300	35	45 S	150	27 E	18.3										
U8	61	10	7	1400	35	51 S	150	21 E	16.9										
U8	61	10	7	1600	35	51 S	150	21 E	17.2										
U8	61	10	8	0800	35	51 S	150	21 E	16.4										
U8	61	10	8	0900	35	57 S	150	15 E	16.7										
U8	61	10	8	1100	36	3 S	150	21 E	17.5										
U8	61	10	8	1300	35	57 S	150	21 E	16.9										
U8	61	10	8	1500	35	57 S	150	21 E	17.2										
U8	61	10	8	1700	35	51 S	150	15 E	16.4										
U8	61	10	9	0900	35	57 S	150	21 E	16.7										
U8	61	10	9	1100	35	51 S	150	21 E	17.2										
U8	61	10	9	1300	35	39 S	150	21 E	17.2										
U8	61	10	12	0700	35	33 S	150	45 E	17.8										
U8	61	10	12	0800	35	27 S	150	51 E	19.4										
U8	61	10	12	0900	35	33 S	150	45 E	18.9										
U8	61	10	12	1100	35	51 S	150	39 E	19.2										
U8	61	10	12	1300	36	9 S	150	27 E	18.9										
U8	61	10	12	1500	36	15 S	150	21 E	18.9										
U8	61	10	13	0900	36	21 S	150	27 E	19.7										
U8	61	10	13	1100	36	27 S	150	21 E	19.4										
U8	61	10	13	1300	36	21 S	150	21 E	19.7										
U8	61	10	13	1400	36	15 S	150	15 E	19.4										
U8	61	10	14	1300	35	45 S	150	21 E	18.9										
U8	61	10	14	1530	35	27 S	150	27 E	18.3										
U8	61	10	19	0700	36	9 S	150	27 E	19.7										
U8	61	10	19	0900	36	21 S	150	27 E	19.4										
U8	61	10	19	1100	36	21 S	150	27 E	19.7										
U8	61	10	19	1300	36	15 S	150	27 E	19.7										
U8	61	10	19	1400	36	15 S	150	27 E	19.7										
U8	61	10	19	1500	36	15 S	150	27 E	19.4										
U8	61	10	20	0900	36	15 S	150	27 E	18.9										
U8	61	10	20	1100	36	21 S	150	15 E	18.3										
U8	61	10	21	1100	36	15 S	150	27 E	18.3										
U8	61	10	21	1300	36	9 S	150	27 E	18.6										
U8	61	10	23	0700	36	33 S	150	15 E	18.3										
U8	61	10	23	0900	36	27 S	150	21 E	18.9										
U8	61	10	23	1100	36	21 S	150	21 E	18.9										
U8	61	10	23	1300	36	9 S	150	27 E	19.2										

VESSEL CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

U8	61	10	23	1500	36	21	S	150	27	E	18.3						
U8	61	10	23	1700	36	27	S	150	9	E	16.7						
U8	61	10	24	0700	36	21	S	150	15	E	17.2						
U8	61	10	24	0900	36	15	S	150	21	E	18.9						
U8	61	10	24	1100	36	15	S	150	27	E	19.2						
U8	61	10	24	1300	36	21	S	150	27	E	18.9						
U8	61	10	24	1500	36	21	S	150	27	E	19.2						
U8	61	10	24	1700	36	21	S	150	15	E	18.9						
U8	61	10	25	0900	36	21	S	150	9	E	16.1						
U8	61	10	25	1000	36	9	S	150	9	E	16.7						
U8	61	10	25	1100	35	57	S	150	9	E	17.2						
U8	61	10	25	1200	35	51	S	150	15	E	16.4						
U8	61	10	25	1300	35	45	S	150	15	E	16.1						
U8	61	10	25	1400	35	39	S	150	21	E	16.7						
U8	61	10	25	1500	35	27	S	150	27	E	16.4						
U8	61	10	28	0700	35	33	S	150	51	E	18.1						
U8	61	10	28	0900	35	45	S	150	39	E	18.3						
U8	61	10	28	1100	36	03	S	150	27	E	18.9						
U8	61	10	28	1300	36	15	S	150	21	E	18.9						
U8	61	10	28	1500	36	15	S	150	21	E	18.9						
U8	61	10	29	0800	36	15	S	150	21	E	18.3						
U8	61	10	29	0900	36	09	S	150	27	E	18.9						
U8	61	10	29	1100	36	03	S	150	33	E	18.9						
U8	61	10	29	1300	36	15	S	150	21	E	18.9						
U8	61	10	29	1500	36	15	S	150	21	E	19.2						
U8	61	10	30	0900	36	21	S	150	27	E	17.2						
U8	61	10	30	1100	36	15	S	150	33	E	18.3						
U8	61	10	30	1300	36	21	S	150	21	E	18.3						
U8	61	10	30	1500	36	15	S	150	21	E	18.9						
U8	61	10	31	0900	36	21	S	150	21	E	19.2						
U8	61	10	31	1100	36	21	S	150	21	E	18.3						
U8	61	10	31	1300	36	21	S	150	21	E	20.0						
U8	61	10	31	1400	36	27	S	150	21	E	20.0						
U8	61	10	31	1500	36	27	S	150	21	E	20.0						
U8	61	11	3	0900	36	21	S	150	27	E	18.9						
U8	61	11	3	1100	36	15	S	150	21	E	19.4						
U8	61	11	3	1300	36	09	S	150	21	E	19.4						
U8	61	11	3	1500	35	57	S	150	15	E	17.2						
U8	61	11	3	1600	35	51	S	150	15	E	17.2						
U8	61	11	4	0700	35	57	S	150	33	E	19.4						

VESSEL CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

U8	61	11	4	0900	35	57	S	150	39	E	18.9							
U8	61	11	4	1100	35	33	S	150	45	E	18.9							
U8	61	11	9	0700	36	21	S	150	09	E	18.6							
U8	61	11	9	0900	36	27	S	150	21	E	18.9							
U8	61	11	9	1100	36	39	S	150	21	E	19.4							
U8	61	11	9	1300	36	51	S	150	27	E	20.0							
U8	61	11	9	1500	36	57	S	150	27	E	20.0							
U8	61	11	9	1700	37	03	S	150	27	E	19.4							
U8	61	11	11	0800	37	03	S	150	03	E	15.0							
U8	61	11	11	0900	37	03	S	150	09	E	15.0							
U8	61	11	11	1100	36	57	S	150	27	E	18.3							
U8	61	11	11	1300	36	45	S	150	21	E	19.4							
U8	61	11	11	1500	36	33	S	150	21	E	19.4							
U8	61	11	11	1700	36	27	S	150	09	E	17.8							
U8	61	11	12	0900	36	33	S	150	21	E	19.2							
U8	61	11	12	1100	36	27	S	150	21	E	19.4							
U8	61	11	12	1300	36	39	S	150	21	E	19.4							
U8	61	11	12	1400	36	39	S	150	21	E	19.4							
U8	61	11	12	1500	36	45	S	150	21	E	18.3							
U8	61	11	12	1700	36	45	S	150	21	E	18.3							
U8	61	11	13	0900	36	57	S	150	09	E	15.8							
U8	61	11	13	1100	36	51	S	150	21	E	18.9							
U8	61	11	13	1300	36	39	S	150	21	E	20.6							
U8	61	11	13	1500	36	33	S	150	27	E	20.6							
U8	61	11	14	0900	36	21	S	150	27	E	19.4							
U8	61	11	14	1100	36	33	S	150	21	E	19.2							
U8	61	11	14	1300	36	45	S	150	09	E	17.2							
U8	61	11	17	0700	36	45	S	150	09	E	16.7							
U8	61	11	17	0900	36	33	S	150	21	E	18.9							
U8	61	11	17	1000	36	33	S	150	21	E	19.2							
U8	61	11	17	1200	36	33	S	150	21	E	18.9							
U8	61	11	17	1300	36	27	S	150	21	E	18.6							
U8	61	11	17	1500	36	33	S	150	21	E	18.9							
U8	61	11	17	1700	36	45	S	150	09	E	17.8							
U8	61	11	24	0800	36	57	S	150	21	E	18.3							
U8	61	11	24	0900	36	45	S	150	21	E	18.3							
U8	61	11	24	1030	36	33	S	150	21	E	18.3							
U8	61	11	24	1100	36	33	S	150	21	E	18.3							
U8	61	11	24	1300	36	27	S	150	21	E	18.3							
U8	61	11	24	1515	36	15	S	150	15	E	18.1							

VESSEL CRUISE STATION YR. MH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

U8	61	11	25	0900	36	27	S	150	09	E	15.6							
U8	61	11	25	1100	36	33	S	150	21	E	18.3							
U8	61	11	25	1300	36	45	S	150	21	E	18.3							
U8	61	11	25	1500	36	57	S	150	15	E	16.4							
U8	61	11	27	0800	36	57	S	150	09	E	17.2							
U8	61	11	27	0900	36	51	S	150	15	E	18.3							
U8	61	11	27	1100	36	39	S	150	21	E	18.6							
U8	61	11	27	1120	36	33	S	150	21	E	18.6							
U8	61	11	27	1200	36	33	S	150	21	E	18.6							
U8	61	11	27	1300	36	33	S	150	21	E	18.9							
U8	61	11	27	1500	36	33	S	150	21	E	18.9							
U8	61	11	27	1700	36	33	S	150	21	E	19.4							
U8	61	11	28	0400	36	21	S	150	03	E	16.9							
U8	61	11	28	0700	36	27	S	150	15	E	16.7							
U8	61	11	28	0900	36	33	S	150	21	E	18.6							
U8	61	11	28	1100	36	33	S	150	21	E	18.6							
U8	61	11	28	1300	36	39	S	150	21	E	19.2							
U8	61	11	28	1440	36	51	S	150	27	E	19.4							
U8	61	11	28	1500	36	51	S	150	27	E	20.0							
U8	61	11	28	1700	36	51	S	150	27	E	19.7							
U8	61	11	29	0900	36	57	S	150	27	E	18.9							
U8	61	11	29	1100	36	45	S	150	21	E	19.7							
U8	61	11	29	1300	36	33	S	150	21	E	20.0							
U8	61	11	29	1500	36	45	S	150	15	E	18.9							
U8	61	12	2	1100	36	57	S	150	15	E	20.3							
U8	61	12	2	1300	36	45	S	150	21	E	20.3							
U8	61	12	2	1500	36	33	S	150	15	E	20.0							
U8	61	12	2	1600	36	39	S	150	15	E	20.3							
U8	61	12	3	0900	36	45	S	150	15	E	19.4							
U8	61	12	3	1100	36	33	S	150	15	E	19.4							
U8	61	12	8	0900	37	03	S	150	09	E	18.9							
U8	61	12	8	1100	36	57	S	150	21	E	19.7							
U8	61	12	8	1300	36	57	S	150	27	E	20.0							
U8	61	12	8	1400	36	57	S	150	21	E	20.0							
U8	61	12	8	1430	36	57	S	150	21	E	20.0							
U8	61	12	11	0900	37	03	S	150	15	E	18.1							
U8	61	12	11	1100	37	03	S	150	27	E	19.4							
U8	61	12	11	1300	37	03	S	150	27	E	19.4							
U8	61	12	12	0900	37	03	S	150	27	E	19.4							
U8	61	12	12	1100	37	09	S	150	27	E	19.4							

VESSEL	CRUISE	STATION	YR.	MR.	DAY	TIME	Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SWELL	WEA.	VIS.	BAROM.
		NUMBER										DN. AMT.	DN. AMT.	DN. AMT.			

UB			61	12	12	1300		37 03 S	150 27 E	19.7							
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VESSEL	CRUISE NUMBER	STATION	YR.	MH.	DAY	TIME	Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND	SEA	SWELL	WEA.	VIS.	BAROM.
												DN, AMT.	DN, AMT.	DN, AMT.			

W2			61	11	28	0700		36	57 S	150	03	E	17.2				
W2			61	11	28	0900		36	39 S	150	21	E	18.7				
W2			61	11	28	1100		36	33 S	150	21	E	18.8				
W2			61	11	28	1300		36	39 S	150	27	E	18.9				
W2			61	11	28	1500		36	51 S	150	27	E	20.0				
W2			61	11	28	1700		36	57 S	150	27	E	19.4				
W2			61	11	28	1900		37	03 S	150	15	E	18.9				
W2			61	12	26	0930		37	03 S	149	57	E	17.8				
W2			61	12	26	1100		37	03 S	150	03	E	18.9				
W2			61	12	26	1300		37	09 S	150	15	E	20.6				
W2			61	12	26	1500		37	09 S	150	15	E	20.6				
W2			61	12	26	1700		37	09 S	150	03	E	18.9				
W2			61	12	26	1830		37	03 S	149	57	E	18.3				

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

W9	61	10	3	0915	35	15	S	151	3	E	16.9
W9	61	10	3	1300	35	21	S	150	39	E	16.7
W9	61	10	7	1230	35	33	S	150	39	E	19.2
W9	61	10	8	0830	35	33	S	150	45	E	18.9
W9	61	10	9	0900	36	15	S	150	15	E	17.2
W9	61	10	12	0900	36	33	S	150	15	E	17.8
W9	61	10	22	1130	36	27	S	150	21	E	17.8
W9	61	10	24	0700	36	15	S	150	15	E	18.9

VESSEL CRUISE STATION YR. MH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

X4	61	1	3	0900	37	3 S	150	3	E	21.1						
X4	61	1	4	0900	37	3 S	150	3	E	20.6						
X4	61	1	10	0900	36	57 S	150	3	E	21.1						
X4	61	1	12	0900	36	57 S	150	3	E	20.0						
X4	61	1	13	0900	36	57 S	150	3	E	20.6						
X4	61	1	22	0900	36	57 S	150	3	E	16.1						
X4	61	1	23	0900	36	57 S	150	3	E	20.0						
X4	61	1	24	0900	36	51 S	150	3	E	20.0						
X4	61	2	3	0900	37	3 S	150	3	E	21.1						
X4	61	2	4	0900	37	3 S	150	3	E	21.1						
X4	61	8	12	0900	36	51 S	150	9	E	15.0						
X4	61	8	13	0900	36	57 S	150	9	E	15.0						
X4	61	8	16	0900	37	3 S	150	3	E	14.4						
X4	61	8	28	0900	37	3 S	150	3	E	14.4						
X4	61	9	4	0900	37	3 S	150	3	E	15.0						
X4	61	9	12	0900	36	57 S	150	3	E	10.6						
X4	61	10	13	0900	37	9 S	150	9	E	15.6						
X4	61	10	14	0900	37	3 S	150	3	E	16.1						
X4	61	10	16	0900	37	9 S	150	9	E	15.0						
X4	61	10	16	1100	37	9 S	150	9	E	15.6						
X4	61	10	19	1100	37	9 S	150	9	E	16.1						
X4	61	10	21	1100	37	21 S	150	3	E	15.0						
X4	61	10	22	1100	37	9 S	150	9	E	15.0						
X4	61	10	23	0900	37	9 S	150	3	E	16.1						
X4	61	10	28	1100	37	3 S	150	3	E	14.7						
X4	61	10	30	0900	37	21 S	150	3	E	15.0						
X4	61	10	31	0900	37	15 S	150	3	E	15.8						
X4	61	11	4	0900	37	9 S	150	3	E	18.3						
X4	61	11	8	0900	37	15 S	150	3	E	16.4						
X4	61	11	10	0900	37	3 S	150	3	E	16.7						
X4	61	11	12	0900	37	3 S	150	3	E	15.3						
X4	61	11	13	0900	37	3 S	150	3	E	16.1						
X4	61	11	17	0900	37	3 S	150	3	E	16.7						
X4	61	11	23	0900	37	3 S	150	3	E	17.8						
X4	61	11	24	0900	37	21 S	150	9	E	15.6						
X4	61	11	25	0900	37	21 S	150	3	E	15.6						
X4	61	11	26	0900	36	51 S	150	9	E	17.2						
X4	61	11	29	0900	37	33 S	150	9	E	16.7						
X4	61	11	30	0900	37	27 S	150	57	E	16.7						

VESSEL CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER

X5	61	9	13	34	51 S	151	9 E	16.7								
X5	61	9	14	35	3 S	150	57 E	15.6								
X5	61	9	17	35	3 S	150	57 E	15.6								
X5	61	9	19	34	57 S	151	3 E	16.7								
X5	61	9	20	35	3 S	151	3 E	16.1								
X5	61	9	21	34	57 S	151	9 E	16.9								
X5	61	9	24	34	51 S	151	9 E	16.9								
X5	61	9	26	34	57 S	151	3 E	16.1								
X5	61	9	27	34	57 S	151	3 E	16.7								
X5	61	9	28	34	51 S	150	51 E	15.8								
X5	61	9	29	34	57 S	150	57 E	15.8								
X5	61	9	30	34	57 S	150	57 E	16.1								
X5	61	10	1	34	57 S	150	57 E	16.1								
X5	61	10	2	34	57 S	150	57 E	16.1								
X5	61	10	3	35	21 S	150	33 E	16.1								
X5	61	10	4	35	27 S	150	33 E	16.1								
X5	61	10	19	34	57 S	151	15 E	20.8								
X5	61	10	23	35	45 S	150	21 E	17.2								
X5	61	10	24	35	51 S	150	15 E	17.2								
X5	61	10	29	36	15 S	150	21 E	18.9								
X5	61	10	30	36	15 S	150	21 E	18.9								
X5	61	11	3	36	15 S	150	21 E	19.4								
X5	61	11	4	36	21 S	150	21 E	19.4								
X5	61	11	5	36	15 S	150	21 E	19.2								
X5	61	11	8	36	21 S	150	21 E	18.9								
X5	61	11	13	36	21 S	150	21 E	19.2								
X5	61	11	14	36	21 S	150	15 E	18.3								
X5	61	11	17	36	21 S	150	27 E	18.9								

VESSEL CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM
 NUMBER DN. AMT. DN. AMT. DN. AMT.

X6	61	10	12	0700	36	15	S	150	9	E	20.3						
X6	61	10	12	0900	36	15	S	150	21	E	17.8						
X6	61	10	12	0930	36	15	S	150	27	E	19.4						
X6	61	10	13	0900	36	15	S	150	15	E	17.8						
X6	61	10	22	0900	36	15	S	150	21	E	18.3						
X6	61	10	22	1000	36	15	S	150	27	E	18.6						
X6	61	10	22	1100	36	9	S	150	27	E	18.6						
X6	61	10	22	1200	36	9	S	150	27	E	18.9						
X6	61	10	24	0800	36	15	S	150	15	E	18.6						
X6	61	10	24	0900	36	15	S	150	27	E	18.9						
X6	61	10	24	1000	36	15	S	150	33	E	19.2						
X6	61	10	24	1100	36	21	S	150	33	E	19.4						
X6	61	10	24	1200	36	21	S	150	33	E	19.7						
X6	61	10	24	1400	36	21	S	150	27	E	18.9						
X6	61	10	24	1500	36	15	S	150	21	E	18.9						
X6	61	10	29	0700	36	15	S	150	9	E	18.3						
X6	61	10	29	0900	36	15	S	150	21	E	18.9						
X6	61	10	29	1000	36	15	S	150	27	E	18.9						
X6	61	10	29	1100	36	9	S	150	21	E	19.1						
X6	61	10	29	1300	36	15	S	150	21	E	18.9						
X6	61	10	29	1500	36	15	S	150	21	E	19.2						
X6	61	10	30	0900	36	15	S	150	21	E	18.9						
X6	61	10	30	1000	36	15	S	150	27	E	18.9						
X6	61	10	30	1100	36	15	S	150	27	E	18.9						
X6	61	10	30	1200	36	9	S	150	33	E	18.9						
X6	61	10	30	1300	36	9	S	150	33	E	19.4						
X6	61	10	30	1400	36	9	S	150	27	E	18.9						
X6	61	10	30	1500	36	15	S	150	27	E	18.9						
X6	61	10	30	1600	36	15	S	150	21	E	18.9						
X6	61	10	31	0900	36	15	S	150	21	E	19.7						
X6	61	10	31	1000	36	15	S	150	27	E	18.9						
X6	61	10	31	1100	36	9	S	150	33	E	18.9						
X6	61	10	31	1200	36	3	S	150	33	E	20.0						
X6	61	10	31	1300	36	9	S	150	27	E	19.4						
X6	61	10	31	1400	36	15	S	150	15	E	19.4						
X6	61	10	31	1500	36	15	S	150	15	E	19.4						
X6	61	11	8	0900	36	15	S	150	21	E	18.9						
X6	61	11	8	1100	36	15	S	150	27	E	19.4						
X6	61	11	8	1200	36	21	S	150	27	E	19.4						
X6	61	11	8	1300	36	27	S	150	27	E	19.4						

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

X6	61	11	8	1400	36	15	S	150	27	E	19.7							
X6	61	11	8	1500	36	15	S	150	15	E	18.9							
X6	61	11	9	0900	36	15	S	150	21	E	18.9							
X6	61	11	9	1000	36	21	S	150	21	E	19.2							
X6	61	11	9	1100	36	27	S	150	21	E	19.2							
X6	61	11	9	1200	36	27	S	150	27	E	19.4							
X6	61	11	9	1300	36	21	S	150	27	E	19.2							
X6	61	11	9	1400	36	15	S	150	27	E	18.9							
X6	61	11	9	1500	36	15	S	150	15	E	18.9							
X6	61	11	10	0800	36	15	S	150	15	E	18.3							
X6	61	11	17	0800	36	15	S	150	15	E	17.8							
X6	61	11	17	0900	36	15	S	150	21	E	18.9							
X6	61	11	17	1000	36	21	S	150	21	E	18.9							
X6	61	11	17	1100	36	21	S	150	21	E	18.9							
X6	61	11	17	1200	36	15	S	150	15	E	18.9							

VESSEL CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

X9	61	9	27	0830	36	21	S	150	15	E	14.4						
X9	61	9	27	0900	36	15	S	150	21	E	15.0						
X9	61	9	27	1000	36	09	S	150	21	E	16.1						
X9	61	9	27	1100	36	15	S	150	15	E	15.8						
X9	61	9	27	1300	36	09	S	150	27	E	16.7						
X9	61	9	27	1400	36	15	S	150	27	E	17.2						
X9	61	9	28	0900	36	09	S	150	27	E	15.6						
X9	61	9	28	1200	36	15	S	150	21	E	16.1						
X9	61	9	28	1230	36	21	S	150	21	E	16.7						
X9	61	9	28	1400	36	21	S	150	27	E	16.7						
X9	61	9	28	1430	36	21	S	150	27	E	16.7						
X9	61	9	28	1600	36	21	S	150	27	E	16.4						
X9	61	9	28	1630	36	21	S	150	21	E	16.4						
X9	61	9	29	0900	36	21	S	150	21	E	16.1						
X9	61	9	29	1000	36	15	S	150	21	E	17.2						
X9	61	9	29	1100	36	21	S	150	21	E	16.1						
X9	61	9	29	1400	36	15	S	150	27	E	16.7						
X9	61	9	30	0800	36	15	S	150	15	E	16.1						
X9	61	9	30	1000	36	21	S	150	15	E	15.6						
X9	61	9	30	1200	36	21	S	150	15	E	16.1						
X9	61	9	30	1400	36	21	S	150	15	E	16.7						
X9	61	10	3	0800	36	15	S	150	15	E	15.6						
X9	61	10	3	0900	36	15	S	150	21	E	16.1						
X9	61	10	3	1000	36	21	S	150	15	E	16.1						
X9	61	10	3	1100	36	27	S	150	15	E	16.1						
X9	61	10	3	1200	36	33	S	150	15	E	15.6						
X9	61	10	6	1330	35	27	S	150	33	E	17.2						
X9	61	10	8	1000	35	03	S	151	03	E	18.9						
X9	61	10	8	1130	34	57	S	150	57	E	18.3						
X9	61	10	9	0900	35	15	S	150	51	E	18.9						
X9	61	10	9	1100	35	33	S	150	33	E	17.8						
X9	61	10	9	1300	35	51	S	150	15	E	17.2						
X9	61	10	12	0900	36	21	S	150	21	E	18.3						
X9	61	10	12	1100	36	15	S	150	15	E	19.2						
X9	61	10	19	0800	36	21	S	150	15	E	18.9						
X9	61	10	19	1000	36	09	S	150	33	E	20.0						
X9	61	10	19	1200	36	09	S	150	33	E	20.0						
X9	61	10	22	1000	36	21	S	150	27	E	18.3						
X9	61	10	22	1100	36	15	S	150	27	E	18.9						
X9	61	10	22	1200	36	09	S	150	27	E	18.6						

VESSEL CRUISE STATION YR. MH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

X9	61	10	22	1400	36	15	S	150	21	E	18.3						
X9	61	10	22	1500	36	21	S	150	27	E	18.6						
X9	61	10	22	1600	36	27	S	150	21	E	18.3						
X9	61	10	23	0930	36	27	S	150	27	E	18.3						
X9	61	10	23	1100	36	21	S	150	27	E	18.6						
X9	61	10	23	1200	36	21	S	150	27	E	18.9						
X9	61	10	23	1330	36	21	S	150	27	E	18.9						
X9	61	10	23	1430	36	21	S	150	21	E	18.9						
X9	61	10	23	1600	36	21	S	150	27	E	18.9						
X9	61	10	24	0900	36	21	S	150	27	E	19.4						
X9	61	10	24	1100	36	21	S	150	21	E	19.4						
X9	61	10	24	1300	36	15	S	150	21	E	19.4						
X9	61	10	24	1500	36	21	S	150	27	E	19.4						
X9	61	10	24	1600	36	21	S	150	09	E	18.3						
X9	61	10	28	0800	36	21	S	150	21	E	18.1						
X9	61	10	28	0900	36	15	S	150	21	E	17.8						
X9	61	10	28	1000	36	15	S	150	27	E	18.6						
X9	61	10	28	1200	36	09	S	150	27	E	19.4						
X9	61	10	28	1400	36	15	S	150	33	E	18.9						
X9	61	10	28	1500	36	15	S	150	15	E	18.9						
X9	61	10	28	1600	36	15	S	150	15	E	18.9						
X9	61	10	28	1800	36	15	S	150	15	E	18.9						
X9	61	10	29	0900	36	15	S	150	15	E	18.6						
X9	61	10	29	1000	36	15	S	150	21	E	18.9						
X9	61	10	29	1200	36	15	S	150	21	E	19.1						
X9	61	10	29	1400	36	15	S	150	15	E	18.9						
X9	61	10	29	1600	36	15	S	150	15	E	18.9						
X9	61	10	30	0800	36	21	S	150	15	E	17.9						
X9	61	10	30	0930	36	15	S	150	21	E	18.9						
X9	61	10	30	1030	36	15	S	150	21	E	19.2						
X9	61	10	30	1230	36	15	S	150	33	E	18.3						
X9	61	10	31	0930	36	21	S	150	21	E	18.9						
X9	61	10	31	1030	36	15	S	150	21	E	17.9						
X9	61	10	31	1200	36	15	S	150	27	E	20.0						
X9	61	10	31	1400	36	21	S	150	27	E	20.0						
X9	61	10	31	1500	36	27	S	150	21	E	20.0						
X9	61	11	3	0900	36	21	S	150	21	E	18.9						
X9	61	11	3	1100	36	15	S	150	21	E	19.6						
X9	61	11	3	1200	36	15	S	150	15	E	19.4						
X9	61	11	3	1300	36	21	S	150	15	E	19.2						

VESSEL CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

X9	61	11	4	0900	36	15	S	150	21	E	18.9
X9	61	11	4	1100	36	27	S	150	21	E	19.2
X9	61	11	4	1300	36	21	S	150	15	E	19.6
X9	61	11	5	1000	36	21	S	150	21	E	19.4
X9	61	11	5	1300	36	09	S	150	27	E	20.0
X9	61	11	5	1500	36	21	S	150	15	E	19.4
X9	61	11	8	0830	36	21	S	150	15	E	18.9
X9	61	11	8	1300	36	21	S	150	15	E	19.4
X9	61	11	8	1600	36	33	S	150	21	E	19.4
X9	61	11	8	1800	36	33	S	150	21	E	19.4
X9	61	11	9	1100	36	21	S	150	21	E	18.9
X9	61	11	9	1300	36	33	S	150	21	E	19.6
X9	61	11	9	1500	36	39	S	150	21	E	20.3
X9	61	11	9	1700	36	51	S	150	15	E	19.4
X9	61	11	10	0900	36	39	S	150	15	E	19.4
X9	61	11	10	1030	36	33	S	150	21	E	19.4
X9	61	11	12	0900	36	27	S	150	21	E	19.4
X9	61	11	12	1000	36	21	S	150	27	E	19.7
X9	61	11	12	1200	36	21	S	150	21	E	19.4
X9	61	11	12	1300	36	21	S	150	21	E	19.4
X9	61	11	13	0715	36	21	S	150	21	E	18.9
X9	61	11	13	0800	36	21	S	150	27	E	19.4
X9	61	11	13	0900	36	21	S	150	27	E	19.4
X9	61	11	13	1100	36	21	S	150	33	E	20.0
X9	61	11	13	1400	36	21	S	150	21	E	20.0
X9	61	11	17	0800	36	21	S	150	21	E	18.9
X9	61	11	17	0900	36	15	S	150	21	E	19.2
X9	61	11	17	1300	36	33	S	150	27	E	18.9
X9	61	11	17	1500	36	27	S	150	27	E	18.9
X9	61	11	27	0930	36	21	S	150	21	E	18.3
X9	61	11	27	1200	36	33	S	150	21	E	18.9
X9	61	11	27	1400	36	27	S	150	27	E	18.9
X9	61	11	27	1530	36	33	S	150	27	E	19.2
X9	61	11	28	0900	36	27	S	150	27	E	18.3
X9	61	11	28	1100	36	33	S	150	27	E	18.9
X9	61	11	28	1400	36	21	S	150	27	E	18.9
X9	61	11	29	0900	36	33	S	150	21	E	18.9
X9	61	11	29	1200	36	27	S	150	27	E	19.4
X9	61	11	29	1400	36	21	S	150	21	E	19.7
X9	61	11	29	1630	36	21	S	150	03	E	19.4

VESSEL CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

X9	61	11	30	0830	36	21	S	150	21	E	18.9
X9	61	11	30	1030	36	15	S	150	27	E	19.4
X9	61	11	30	1300	36	15	S	150	27	E	19.4
X9	61	12	2	0930	36	27	S	150	21	E	18.9
X9	61	12	2	1100	36	15	S	150	15	E	19.4
X9	61	12	2	1300	36	15	S	150	21	E	19.4
X9	61	12	2	1500	36	21	S	150	15	E	19.4
X9	61	12	3	0900	36	21	S	150	21	E	18.9
X9	61	12	3	1100	36	15	S	150	15	E	19.4
X9	61	12	4	0900	36	27	S	150	21	E	20.0
X9	61	12	4	1100	36	33	S	150	15	E	20.0
X9	61	12	4	1300	36	33	S	150	21	E	20.3
X9	61	12	4	1500	36	39	S	150	21	E	20.3

VESSEL CRUISE STATION YR. MTH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BARDM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

Y1	61	8	8	0900	37	15 S	150	15 E	13.1								
Y1	61	8	9	0900	36	45 S	150	15 E	13.6								
Y1	61	8	10	0900	36	45 S	150	15 E	14.2								
Y1	61	8	12	0900	37	15 S	150	15 E	11.9								
Y1	61	8	13	0900	37	15 S	150	15 E	13.1								
Y1	61	8	14	0900	37	21 S	150	15 E	13.1								
Y1	61	8	28	0900	37	15 S	150	15 E	15.0								
Y1	61	8	29	0900	37	15 S	150	15 E	14.7								
Y1	61	8	30	0900	37	15 S	150	15 E	14.2								
Y1	61	8	31	0900	37	09 S	150	21 E	14.2								
Y1	61	9	1	0900	37	09 S	150	15 E	15.0								
Y1	61	9	4	0900	37	03 S	150	15 E	14.4								
Y1	61	9	5	0900	37	03 S	150	15 E	13.3								
Y1	61	9	6	0900	37	09 S	150	15 E	14.2								
Y1	61	9	7	0900	37	09 S	150	21 E	12.8								
Y1	61	9	8	0900	37	09 S	150	21 E	13.3								
Y1	61	9	9	0900	37	21 S	150	09 E	12.8								
Y1	61	9	10	0900	37	27 S	150	09 E	12.8								
Y1	61	9	12	0900	37	15 S	150	09 E	12.8								
Y1	61	9	13	0900	37	15 S	150	09 E	13.1								
Y1	61	9	14	0900	36	51 S	150	09 E	13.9								
Y1	61	9	19	0900	37	15 S	150	09 E	12.8								
Y1	61	9	20	0900	36	45 S	150	09 E	13.9								
Y1	61	9	21	0900	36	45 S	150	09 E	14.2								
Y1	61	9	22	0900	37	15 S	150	09 E	13.3								
Y1	61	9	23	0900	37	09 S	150	09 E	13.3								
Y1	61	9	24	0900	37	15 S	150	15 E	13.9								
Y1	61	9	28	0900	37	15 S	150	15 E	13.6								
Y1	61	9	29	0900	37	15 S	150	15 E	13.6								
Y1	61	9	30	0900	36	51 S	150	09 E	13.3								
Y1	61	10	6	0900	37	15 S	150	09 E	14.2								
Y1	61	10	7	0900	36	51 S	150	09 E	13.1								
Y1	61	10	13	0900	37	15 S	150	15 E	15.0								
Y1	61	10	16	0900	37	09 S	150	15 E	15.0								
Y1	61	10	22	0900	37	27 S	150	09 E	15.0								
Y1	61	11	4	0900	37	27 S	150	09 E	15.0								
Y1	61	11	8	0900	37	15 S	150	09 E	16.1								
Y1	61	11	28	0900	36	33 S	150	45 E	18.3								
Y1	61	11	28	1200	36	39 S	150	45 E	19.4								
Y1	61	11	29	0900	36	57 S	150	21 E	18.6								

VESSEL CRUISE STATION YR. MH. DAY TIME Z LATITUDE LONGITUDE TEMP. SALINITY WIND SEA SWELL WEA. VIS. BAROM.
 NUMBER DN. AMT. DN. AMT. DN. AMT.

Y2	61	8	12	1000	36	45	S	150	09	E	16.7
Y2	61	8	12	1200	36	45	S	150	03	E	15.8
Y2	61	8	13	1000	36	45	S	150	03	E	15.6
Y2	61	8	14	1000	36	45	S	150	09	E	15.6
Y2	61	8	17	1000	37	03	S	150	09	E	15.3
Y2	61	8	28	1300	37	03	S	150	03	E	15.6
Y2	61	8	29	1000	37	03	S	150	03	E	15.3
Y2	61	8	30	1000	37	03	S	150	03	E	14.4
Y2	61	8	31	1000	37	09	S	150	15	E	14.7
Y2	61	9	1	1000	37	09	S	150	21	E	16.1
Y2	61	9	4	1000	37	15	S	150	03	E	13.3
Y2	61	9	5	1000	37	21	S	150	09	E	13.1
Y2	61	9	6	1000	37	09	S	150	21	E	14.7
Y2	61	9	7	1000	37	21	S	150	15	E	13.3
Y2	61	9	8	1000	37	21	S	150	15	E	13.1
Y2	61	9	9	1000	37	03	S	150	03	E	13.3
Y2	61	9	10	1000	37	03	S	150	03	E	13.1
Y2	61	9	12	1000	36	57	S	150	03	E	14.2
Y2	61	9	13	1000	37	21	S	150	15	E	14.4
Y2	61	9	15	1000	36	57	S	150	03	E	13.6
Y2	61	9	19	1000	36	57	S	150	03	E	14.4
Y2	61	9	20	1000	36	57	S	150	03	E	13.9
Y2	61	9	21	1000	36	45	S	150	09	E	14.7
Y2	61	9	22	1000	37	51	S	150	09	E	13.6
Y2	61	9	23	1000	37	21	S	150	15	E	13.6
Y2	61	9	28	1000	37	21	S	150	15	E	13.3
Y2	61	9	29	1000	37	33	S	150	03	E	13.6
Y2	61	10	3	1000	37	21	S	150	03	E	13.9
Y2	61	10	4	1000	37	21	S	150	15	E	14.2
Y2	61	10	5	1000	37	03	S	150	09	E	14.2
Y2	61	10	6	1000	37	21	S	150	15	E	13.9
Y2	61	10	13	1000	37	09	S	150	15	E	15.0
Y2	61	10	14	1000	37	03	S	150	09	E	15.6
Y2	61	10	16	1000	37	09	S	150	09	E	14.4
Y2	61	10	17	1000	37	03	S	150	09	E	17.2
Y2	61	10	20	1000	37	21	S	152	03	E	15.6
Y2	61	10	22	1000	37	21	S	152	03	E	15.6
Y2	61	10	24	1000	37	03	S	151	03	E	15.6
Y2	61	10	28	1000	37	03	S	151	03	E	15.6
Y2	61	10	29	1000	37	21	S	150	15	E	14.4

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

Y2			61	10	30	1000	37	27 S	150	09	E	14.4											
Y2			61	10	31	1000	37	27 S	150	09	E	15.6											
Y2			61	11	8	1000	37	27 S	150	09	E	16.7											
Y2			61	11	9	1000	37	03 S	150	09	E	15.0											
Y2			61	11	10	1000	37	03 S	150	09	E	15.6											
Y2			61	11	12	1000	37	03 S	150	09	E	15.0											

VESSEL	CRUISE NUMBER	STATION	YR.	MTH.	DAY	TIME Z	LATITUDE	LONGITUDE	TEMP.	SALINITY	WIND		SEA		SWELL		WEA.	VIS.	BAROM.
											DN.	AMT.	DN.	AMT.	DN.	AMT.			

Y3			61	11	21	0600	36	45 S 150	21	E	17.8									
Y3			61	11	23		36	33 S 150	21	F	18.3									
Y3			61	11	24		36	33 S 150	21	F	17.8									
Y3			61	11	28		36	51 S 150	21	F	18.3									
Y3			61	11	29		37	03 S 150	27	E	18.3									
Y3			61	11	30		37	03 S 150	27	F	18.9									
Y3			61	12	4		37	03 S 150	27	E	18.9									
Y3			61	12	6		37	09 S 150	27	E	18.9									
Y3			61	12	9		37	09 S 150	27	E	19.4									
Y3			61	12	10		37	09 S 150	27	E	19.4									
Y3			61	12	12		37	09 S 150	27	E	19.4									
Y3			61	12	17		37	09 S 150	27	F	20.0									
Y3			61	12	18		37	09 S 150	27	E	20.0									
Y3			61	12	19		37	09 S 150	27	F	20.0									
Y3			61	12	22		37	15 S 150	27	E	20.0									
Y3			61	12	23		37	15 S 150	21	F	20.0									
Y3			61	12	29		37	15 S 150	27	E	20.6									
Y3			61	12	30		37	03 S 150	27	E	20.6									

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 plantological 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 Rottnest 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