

*Wilkes*

UNIVERSITY OF CALIFORNIA    SCRIPPS INSTITUTION OF OCEANOGRAPHY

# data report

PHYSICAL AND CHEMICAL DATA

CalCOFI Cruise 6610  
8-27 October 1966

Special Cruise 6611  
10-13 November 1966

and

CalCOFI Cruise 6612  
2-19 December 1966

SIO Reference 69-2

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Sponsored by  
Marine Research Committee

SIO Reference 69-2

Approved for distribution:

*William A. Nierenberg*  
W. A. Nierenberg, Director

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## INTRODUCTION

The data in this report were collected on Cruises 6610 and 6612 of the California Cooperative Fisheries Investigations (CalCOFI) program by the RV David Starr Jordan of the Bureau of Commercial Fisheries and the RV Alexander Agassiz of the Scripps Institution of Oceanography. Data from Special Cruise 6611 by the RV Alexander Agassiz are also included in this report. The first two figures in this cruise-numbering system represent the year of the cruise; the last two figures, the month. The cruises preceding these in the series are 6601, 6602, 6604, 6605 and 6606 all of which appear in SIO Ref. 68-3; and 6607, 6608, 6609 and Special Cruise 6608 all of which appear in SIO Ref. 68-21.

These data were collected in part by personnel of and processed completely by the Data Collection and Processing Group (DCPG, MLR), Scripps Institution of Oceanography.

### TABULATED DATA

On ~~Cruises 6610 and 6612~~ the Nansen-bottle-cast data are tabulated at observed depths; the values at standard depths are computer interpolations according to a modified Rattray technique<sup>1/</sup>, except that some property values at standard depths have been determined from consideration of other information such as bathythermograph traces and adjacent stations. These property values were entered in the "observed" columns to prevent instabilities or to indicate features not covered by the hydrographic cast. The values are indicated by notations (see FOOTNOTES).

Special Cruise 6611 was for a study of oxygen minimums in Santa Barbara Basin. Standard depth values of temperature and salinity were read from STD recordings.

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<sup>1/</sup>Rattray, Maurice (1962). Interpolation errors and oceanographic sampling. Deep-Sea Res. 9: 25-37.

The data tabulated are of the same type as have previously appeared in these reports; the column headings from the computer are explained as follows:

Z	Depth in meters	
T	Temperature	°C
S	Salinity	‰
OXY	Oxygen	ml/L
PHO	Phosphate	µg at/L
SIL	Silicate	µg at/L
NIT	Nitrite	µg at/L
D*T	$\delta_T$	cl/ton
SIG*T	$\sigma_t$	g/L
DD	$\Delta D$	dyn. m

## STANDARD PROCEDURES

### Hydrographic Casts

The observed data have been plotted and then evaluated using the method described by Klein.<sup>2/</sup> This involves consideration of their variation as functions of density or depth and their relation to each other, and comparison with concurrent bathythermograph observations and with previous or adjacent observations. The 125-meter level was introduced into the integration to obtain greater accuracy in the determination of  $\Delta D$ .

To indicate degree of accuracy, temperatures are recorded in tenths of a degree when obtained by bucket thermometer, thermograph, or bathythermograph, while temperatures from reversing thermometers are recorded in hundredths of a degree. The salinity values obtained by salinometer are recorded to three decimal places, provided they meet accepted standards. The values recorded "have a reproducibility of  $\pm 0.004\%$  salinity at the 95 per cent probability level, and a probable accuracy of  $\pm 0.01\%$  salinity or better at the same level of probability."<sup>3/</sup> The values are recorded to two decimal places when only one determination per sample was obtained, or where there is doubt concerning the accuracy of a particular sample, or of all samples on a station. The accuracy of all samples obtained by salinometer and recorded to two decimal places is believed to be equal to or better than those obtained by manual titration.

A hyphen is used to indicate a missing observed value. The time is the time of messenger release. When more than one bottle cast was made on station, messenger times and wire angles are given in order in increasing depth, and a significant change in position during a multiple cast is listed similarly. Multiple casts are indicated by a letter

<sup>2/</sup>Klein, Hans T. A new technique for processing physical oceanographic data. MS.

<sup>3/</sup>Quotation from Department of Oceanography, University of Washington, Tech. Rep. No. 66, UW Ref. 60-18, October 1960.

following all observed depths of each cast except the cast originating at the surface.  
Footnotes corresponding to each letter explain the type of cast.

On stations where more than one cast was lowered, slight discrepancies in the property values may be noted. These may be caused by changes in geographical position, real changes with time, slight errors in measurement or a combination of these factors. Values at standard depths in the area of these discrepancies may be determined from reconciliation of the plotted observed values and entered in the "observed" columns with notations.

#### In situ Salinity/Temperature/Depth Recorder

The manufacturer of the STD claims for the temperature an accuracy of  $\pm 0.05^{\circ}\text{C}$  on all ranges with repeatability of  $\pm 0.01^{\circ}\text{C}$  and for the salinity an accuracy of  $\pm 0.03\text{‰}$  on all ranges with repeatability of  $\pm 0.01\text{‰}$ .<sup>4/</sup> Except for the depth range corresponding to the steepest part of the thermocline, where the salinity trace appears to fluctuate more widely than the bottle samples can confirm, the results of this cruise support the manufacturer's claims.

For Special Cruise 6611 the temperature was accepted without correction, but  $-0.09\text{‰}$  was applied to all salinity values.

#### FOOTNOTES

In addition to footnotes, three special notations are used without footnotes because their meaning is always the same.

Values which are not used in interpolation because they seem to be in error without apparent reason are indicated by the following notation.

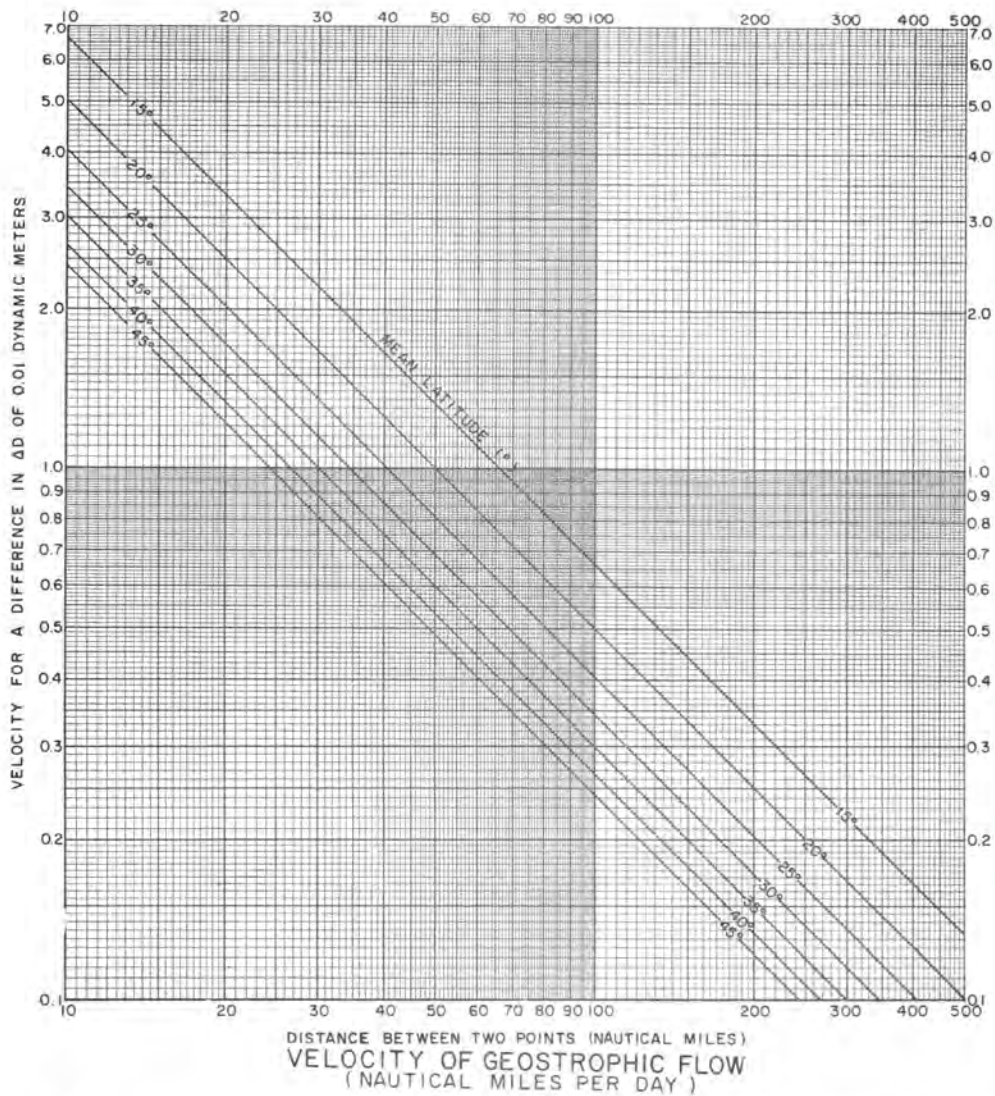
u: uncertain value

Values at standard levels of depth entered in the observed columns to limit machine interpolations may have either of the following notations.

k: a value determined from another measurement such as a bathythermogram or STD recording.

g: a value determined from considerations such as stability or previous or surrounding stations.

<sup>4/</sup> In situ Salinity/Temperature/Depth Monitoring and Recording System, Model 9006, Tech. Rep. No. 102, HYTECH Marine Products, The Bissett-Berman Corporation.



cm/sec	0	1	2	3	4	5	6	7	8	9
0	<i>KNOTS</i> NM/DAY	0.02 0.47	0.04 0.93	0.06 1.40	0.08 1.86	0.10 2.33	0.12 2.80	0.14 3.26	0.16 3.73	0.17 4.20
10	0.19 4.66	0.21 5.13	0.23 5.59	0.25 6.06	0.27 6.53	0.29 6.99	0.31 7.46	0.33 7.93	0.35 8.39	0.37 8.86
20	0.39 9.32	0.41 9.79	0.43 10.26	0.45 10.72	0.47 11.19	0.49 11.66	0.51 12.12	0.52 12.59	0.54 13.05	0.56 13.52
30	0.58 13.99	0.60 14.45	0.62 14.92	0.64 15.38	0.66 15.85	0.68 16.32	0.70 16.78	0.72 17.25	0.74 17.72	0.76 18.18
40	0.78 18.65	0.80 19.11	0.82 19.58	0.84 20.05	0.85 20.51	0.87 20.98	0.89 21.45	0.91 21.91	0.93 22.38	0.95 22.84
50	0.97 23.31	0.99 23.78	1.01 24.24	1.03 24.71	1.05 25.17	1.07 25.64	1.09 26.11	1.11 26.57	1.13 27.04	1.15 27.51
60	1.17 27.98	1.18 28.44	1.20 28.90	1.22 29.37	1.24 29.84	1.26 30.30	1.28 30.77	1.30 31.24	1.32 31.70	1.34 32.17
70	1.36 32.63	1.38 33.10	1.40 33.57	1.42 34.03	1.44 34.50	1.46 34.96	1.48 35.43	1.50 35.90	1.52 36.36	1.53 36.83
80	1.55 37.30	1.57 37.76	1.59 38.23	1.61 38.69	1.63 39.16	1.65 39.63	1.67 40.09	1.69 40.56	1.71 41.03	1.73 41.49
90	1.75 41.96	1.77 42.42	1.79 42.89	1.81 43.36	1.83 43.82	1.85 44.29	1.86 44.76	1.88 45.22	1.90 45.69	1.92 46.15
100	1.94 46.62	1.96 47.09	1.98 47.55	2.00 48.02	2.02 48.48	2.04 48.95	2.06 49.42	2.08 49.88	2.10 50.35	2.12 50.82

CONVERSION TABLE  
(CENTIMETERS / SECOND - KNOTS - NAUTICAL MILES / DAY)

1 cm/sec = 0.019 kts = 0.466 NAUTICAL MILES / DAY  
 1 kt = 24 NAUTICAL MILES / DAY = 51.48 cm/sec  
 1 NAUTICAL MILE / DAY = 0.042 kts = 2.14 cm/sec

FIGURES  
Special Cruise 6611

1. Special Cruise 6611, station positions



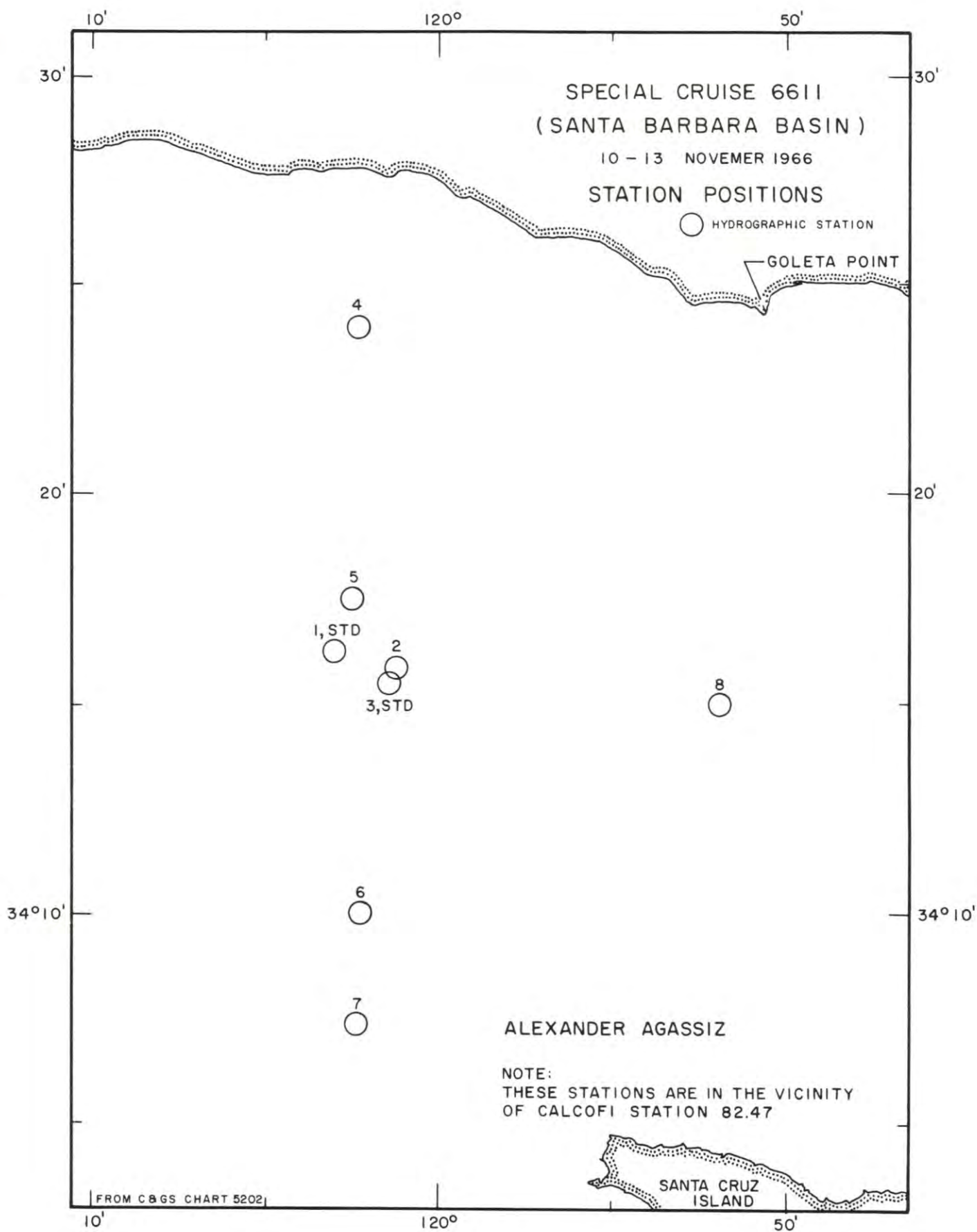


FIGURE 1

PERSONNEL  
Special Cruise 6611

SHIP'S CAPTAIN

Davis, Laurence E., RV Alexander Agassiz

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

RV Alexander Agassiz

Soutar, Andrew, Laboratory Technician (in charge)  
Berger, Wolfgang, Research Assistant  
Brown, Daniel M., Principal Marine Technician  
Duffrin, Erich W., Senior Laboratory Mechanician  
Graham, Jery B., Electronics Technician  
Hester, Arthur W., Senior Marine Technician  
Pine, James S., Senior Marine Technician

OBSERVED LEVELS OF DEPTH								STANDARD LEVELS OF DEPTH							
INPUT								COMPUTED							
Z	T	S	OXY	PHU	SIL	NIT	D#T	Z	T	S	OXY	SIG#T	D#T	DD	
1								1 A)							
SPECIAL CRUISE 6611															
ALEXANDER AGASSIZ, NOVEMBER 10 1966, 0421 0505 GMT, 34 16.2N 120 03.5W, SOUNDING 313 FM, WIND 270 FORCE 4, WEATHER PARTLY CLOUDY, SEA MISSING, WIRE ANGLE 03.															
2	16.72	33.490	5.678	-	-	-	349.8	0	16.66	33.48	-	24.45	349.2	0	
98	10.54	-	3.62	-	-	-	-	10	16.66	33.48	-	24.45	349.2	.035	
186	-	-	2.39	-	-	-	-	20	16.08	33.48	-	24.58	336.5	.069	
275	-	-	1.38	-	-	-	-	30	15.84	33.48	-	24.64	331.3	.103	
366	-	-	.62	-	-	-	-	50	13.93	33.46	-	25.03	293.6	.165	
454	6.79	-	.22	-	-	-	-	75	11.39	33.56	-	25.61	239.1	.232	
463	-	-	.12	-	-	-	-	100	10.38	33.69	-	25.89	212.5	.289	
473	-	-	.12	-	-	-	-	125	10.01	33.78	-	26.02	199.8	.341	
482	-	-	.10	-	-	-	-	150	9.70	33.87	-	26.14	188.2	.391	
492	6.56	-	.10	-	-	-	-	200	8.97	34.05	-	26.40	163.6	.480	
502	-	-	.10	-	-	-	-	250	8.46	34.13	-	26.54	150.1	.561	
512	-	-	.18	-	-	-	-	300	8.17	34.17	-	26.62	142.9	.636	
522	-	-	.05	-	-	-	-	400	7.21	34.21	-	26.79	126.7	.777	
532	6.45	-	.06	-	-	-	-	500	6.52	34.24	-	26.91	115.5	.905	
542	-	-	.05	-	-	-	-								
552	-	-	.07	-	-	-	-								
562	6.44	34.253	.06	-	-	-	113.6								
567	6.44	34.254	.11	-	-	-	113.5								
570	-	-	.34	-	-	-	-								

OBSERVED LEVELS OF DEPTH								STANDARD LEVELS OF DEPTH							
INPUT								COMPUTED							
Z	T	S	OXY	PHU	SIL	NIT	D#T	Z	T	S	OXY	SIG#T	D#T	DD	
2								2							
SPECIAL CRUISE 6611															
ALEXANDER AGASSIZ, NOVEMBER 11 1966, 0313 0215 GMT, 34 15.8N 120 01.2W, SOUNDING 312 FM, WIND 040 FORCE 3, WEATHER MISSING, SEA ROUGH, WIRE ANGLE 03.															
0	16.10	33.475	5.87	-	-	-	337.3	0	16.04	33.46	-	24.58	337.1	0	
96	10.70	-	3.74	-	-	-	-	10	15.64	33.50	-	24.70	325.6	.033	
186	9.28	-	2.39	-	-	-	-	20	14.75	33.49	-	24.88	307.8	.065	
275	-	-	1.23	-	-	-	-	30	13.80	33.49	-	25.08	288.8	.095	
365	-	-	.64	-	-	-	-	50	12.45	33.38	-	25.27	271.3	.151	
454	6.70	-	.12	-	-	-	-	75	11.28	33.51	-	25.59	240.9	.215	
464	-	-	.08	-	-	-	-	100	10.39	33.72	-	25.91	210.4	.272	
475	-	-	.08	-	-	-	-	125	9.78	33.83	-	26.10	192.4	.323	
484	-	-	.06	-	-	-	-	150	9.48	33.92	-	26.22	181.0	.371	
494	6.53	-	.09	-	-	-	-	200	9.07	34.04	-	26.38	165.8	.459	
505	-	-	.10	-	-	-	-	250	8.58	34.12	-	26.52	152.6	.541	
515	-	-	.07	-	-	-	-	300	8.22	34.18	-	26.62	142.9	.617	
525	-	-	.06	-	-	-	-	400	7.14	34.22	-	26.81	125.0	.757	
535	6.46	-	.08	-	-	-	-	500	6.52	34.25	-	26.91	114.8	.883	
545	-	-	.08	-	-	-	-								
555	-	-	.06	-	-	-	-								
565	6.43	34.250	.08	-	-	-	113.7								
570	6.45	34.250	.08	-	-	-	113.9								
576	-	-	.12	-	-	-	-								

OBSERVED LEVELS OF DEPTH								STANDARD LEVELS OF DEPTH							
INPUT								COMPUTED							
Z	T	S	OXY	PHU	SIL	NIT	D#T	Z	T	S	OXY	SIG#T	D#T	DD	
3								3							
SPECIAL CRUISE 6611															
ALEXANDER AGASSIZ, NOVEMBER 12 1966, 0210 0410 GMT, 34 16N 120 01.3W, SOUNDING 312 FM, WIND 280 FORCE 2, WEATHER PARTLY CLOUDY, SEA SLIGHT, WIRE ANGLE 00.															
0	-	-	5.83	-	-	-	-	0	16.42	33.49	-	24.51	343.2	0	
96	10.77	-	3.80	-	-	-	-	10	16.35	33.47	-	24.51	343.1	.034	
185	9.21	-	2.63	-	-	-	-	20	15.00	33.42	-	24.78	318.1	.067	
275	-	-	1.30	-	-	-	-	30	12.52	33.35	-	25.23	274.8	.097	
365	-	-	.66	-	-	-	-	50	12.03	33.44	-	25.39	259.3	.151	
474	6.75	-	.19	-	-	-	-	75	11.20	33.56	-	25.64	235.8	.213	
464	-	-	.08	-	-	-	-	100	10.65	33.67	-	25.82	218.4	.270	
474	-	-	.16	-	-	-	-	125	10.00	33.81	-	26.04	197.4	.323	
483	-	-	.08	-	-	-	-	150	9.83	33.87	-	26.12	190.3	.372	
493	6.52	-	.08	-	-	-	-	200	9.10	34.04	-	26.37	166.3	.463	
503	-	-	.04	-	-	-	-	250	8.57	34.13	-	26.53	151.7	.544	
513	-	-	.07	-	-	-	-	300	8.20	34.18	-	26.62	142.6	.620	
523	-	-	.07	-	-	-	-	400	7.17	34.22	-	26.80	125.4	.760	
533	6.46	-	.05	-	-	-	-	500	6.50	34.26	-	26.92	113.8	.886	
543	-	-	.04	-	-	-	-								
553	-	-	.06	-	-	-	-								
563	6.44	-	.07	-	-	-	-								
568	6.45	-	.04	-	-	-	-								
571	-	-	.06	-	-	-	-								
574	-	-	.20	-	-	-	-								

- A) ALL STATIONS ON THIS CRUISE ARE IN THE VICINITY OF CALCOFI STATION 82.47.
- B) EIGHT NANSEN BOTTLE LOWERINGS WERE MADE TO INVESTIGATE THE OXYGEN MINIMUM. ALL STANDARD DEPTH VALUES OF TEMPERATURE AND SALINITY WERE READ FROM S/T/D RECORDINGS. THE TEMPERATURES WERE ACCEPTED WITHOUT CORRECTION BUT -0.09 WAS APPLIED TO ALL SALINITY VALUES.

## OBSERVED LEVELS OF DEPTH

## STANDARD LEVELS OF DEPTH

## INPUT

## COMPUTED

## INPUT

## COMPUTED

Z	T	S	OXY	PHO	SIL	NIT	D*T	Z	T	S	OXY	SIG*T	D*T	DD
4 SPECIAL CRUISE 6611 4														
ALEXANDER AGASSIZ, NOVEMBER 13 1966, 0317 0340 GMT, 34 24N 120 03.3W, SOUNDING 54 FM, WIND MISSING, WEATHER MISSING, SEA MISSING, WIRE ANGLE 03.														
0	-	-	5.84	-	-	-	-	0	16.52	33.47	-	24.47	346.8	0
14	-	-	5.85	-	-	-	-	10	16.38	33.47	-	24.51	343.8	.035
23	15.35	-	5.74	-	-	-	-	20	15.92	33.41	-	24.56	338.2	.069
33	-	-	5.55	-	-	-	-	30	13.38	33.31	-	25.03	293.9	.100
42	-	-	4.91	-	-	-	-	50	12.51	33.39	-	25.26	271.7	.157
52	-	-	5.10	-	-	-	-	75	11.93	33.47	-	25.44	255.3	.223
62	12.30	-	4.95	-	-	-	-							
71	-	-	4.53	-	-	-	-							
81	-	-	4.43	-	-	-	-							
91	11.67	-	4.43	-	-	-	-							
95	-	-	4.36	-	-	-	-							
98	-	-	4.36	-	-	-	-							
101	-	-	4.32	-	-	-	-							

5 SPECIAL CRUISE 6611 5  
ALEXANDER AGASSIZ, NOVEMBER 13 1966, 0513 0544 GMT, 34 17.5N 120 02.4W, SOUNDING 310 FM, WIND 320 FORCE 1, WEATHER MISSING, SEA MISSING, WIRE ANGLE 05.

404	7.08	34.240	.44	-	-	-	122.7	0	16.56	33.49	-	24.48	346.2	0
414	7.04	34.235	.40	-	-	-	122.6	10	16.56	33.49	-	24.48	346.2	.035
423	-	-	.34	-	-	-	-	20	16.30	33.45	-	24.51	343.5	.069
433	-	-	.31	-	-	-	-	30	13.50	33.33	-	25.02	294.7	.101
443	-	-	.24	-	-	-	-	50	11.58	33.51	-	25.53	246.1	.155
453	6.70	-	.13	-	-	-	-	75	11.03	33.58	-	25.69	231.4	.215
463	-	-	.11	-	-	-	-	100	10.68	33.66	-	25.81	219.0	.272
473	-	-	.12	-	-	-	-	125	10.20	33.76	-	25.97	204.3	.326
483	-	-	.08	-	-	-	-	150	9.88	33.85	-	26.10	192.5	.376
493	6.52	-	.11	-	-	-	-	200	9.13	33.94	-	26.29	174.2	.470
503	-	-	.08	-	-	-	-	250	8.75	34.11	-	26.48	155.8	.554
513	-	-	.09	-	-	-	-	300	8.33	34.17	-	26.59	145.2	.632
523	-	-	.09	-	-	-	-	400	7.13	34.23	-	26.82	124.2	.772
533	6.47	-	.08	-	-	-	-	500	6.54	34.26	-	26.92	114.3	.898
543	-	-	.07	-	-	-	-							
553	-	-	.10	-	-	-	-							
563	6.44	34.251	.07	-	-	-	113.7							
568	6.44	34.251	.08	-	-	-	113.7							
571	-	-	.07	-	-	-	-							
574	-	-	.07	-	-	-	-							

6 SPECIAL CRUISE 6611 6  
ALEXANDER AGASSIZ, NOVEMBER 13 1966, 0816 0845 GMT, 34 10N 120 02.2W, SOUNDING 281 FM, WIND MISSING, WEATHER MISSING, SEA MISSING, WIRE ANGLE 03.

351	7.58	-	.79	-	-	-	-	0	16.48	33.50	-	24.51	343.8	0
360	7.50	-	.69	-	-	-	-	10	15.69	33.43	-	24.63	331.8	.034
370	-	-	.54	-	-	-	-	20	15.28	33.47	-	24.75	320.2	.066
380	-	-	.59	-	-	-	-	30	14.04	33.39	-	24.96	300.9	.098
390	-	-	.63	-	-	-	-	50	12.49	33.36	-	25.24	273.5	.155
400	7.15	-	.54	-	-	-	-	75	10.90	33.56	-	25.69	230.7	.219
410	-	-	.41	-	-	-	-	100	10.10	33.79	-	26.01	200.5	.273
420	-	-	.38	-	-	-	-	125	9.66	33.87	-	26.15	187.6	.322
430	-	-	.35	-	-	-	-	150	9.42	33.95	-	26.25	177.9	.368
440	6.73	-	.25	-	-	-	-	200	8.85	34.09	-	26.45	158.8	.454
449	-	-	.19	-	-	-	-	250	8.52	34.14	-	26.54	150.2	.534
459	-	-	.12	-	-	-	-	300	8.05	34.20	-	26.66	139.0	.608
469	-	-	.10	-	-	-	-	400	7.05	34.23	-	26.83	123.1	.745
480	6.58	-	.11	-	-	-	-	500	6.53	34.26	-	26.92	114.2	.870
489	-	-	.10	-	-	-	-							
499	-	-	.08	-	-	-	-							
509	6.49	-	.08	-	-	-	-							
514	6.47	-	.10	-	-	-	-							
517	-	-	.05	-	-	-	-							
521	-	-	.10	-	-	-	-							

OBSERVED LEVELS OF DEPTH								STANDARD LEVELS OF DEPTH							
INPUT				COMPUTED				INPUT				COMPUTED			
Z	T	S	GXY	PHO	SIL	NIT	D*T	Z	T	S	GXY	SIG*T	D*T	DD	
7								7							
SPECIAL CRUISE 6611															
ALEXANDER AGASSIZ, NOVEMBER 13 1966, 0950 1013 GMT, 34 07.4N 120 02.3W, SOUNDING 144 FM, WIND MISSING, WEATHER MISSING, SEA MISSING, WIRE ANGLE 10.															
102	10.04	-	3.24	-	-	-	-	0	16.06	33.47	-	24.58	336.8	0	
112	9.82	-	3.11	-	-	-	-	10	16.00	33.46	-	24.58	336.2	.034	
122	-	-	2.98	-	-	-	-	20	15.35	33.45	-	24.72	323.2	.067	
132	-	-	2.88	-	-	-	-	30	14.50	33.48	-	24.93	303.5	.098	
141	-	-	2.77	-	-	-	-	50	12.82	33.48	-	25.27	270.8	.156	
151	9.34	-	2.67	-	-	-	-	75	10.85	33.63	-	25.76	224.7	.218	
160	-	-	2.56	-	-	-	-	100	10.07	33.80	-	26.02	199.3	.271	
170	-	-	2.50	-	-	-	-	125	9.49	33.94	-	26.23	179.7	.319	
179	-	-	2.43	-	-	-	-	150	9.38	33.96	-	26.26	176.5	.365	
189	9.16	-	2.33	-	-	-	-	200	9.07	34.05	-	26.38	165.1	.452	
199	-	-	2.25	-	-	-	-								
210	-	-	2.15	-	-	-	-								
219	-	-	2.04	-	-	-	-								
229	8.70	-	1.79	-	-	-	-								
238	-	-	1.64	-	-	-	-								
248	-	-	1.61	-	-	-	-								
258	8.48	-	1.54	-	-	-	-								
262	8.40	-	1.47	-	-	-	-								
265	-	-	1.42	-	-	-	-								
268	-	-	1.38	-	-	-	-								

OBSERVED LEVELS OF DEPTH								STANDARD LEVELS OF DEPTH							
INPUT				COMPUTED				INPUT				COMPUTED			
Z	T	S	GXY	PHO	SIL	NIT	D*T	Z	T	S	GXY	SIG*T	D*T	DD	
8								8							
SPECIAL CRUISE 6611															
ALEXANDER AGASSIZ, NOVEMBER 13 1966, 1152 1214 GMT, 34 15N 119 51.8W, SOUNDING 258 FM, WIND MISSING, WEATHER MISSING, SEA MISSING, WIRE ANGLE 00.															
303	8.10	34.191	.94	-	-	-	140.4	0	16.77	33.43	-	24.38	355.3	0	
313	8.00	34.194	.85	-	-	-	138.7	10	16.78	33.43	-	24.38	355.5	.036	
323	-	-	.83	-	-	-	-	20	16.28	33.43	-	24.50	344.5	.071	
333	-	-	.71	-	-	-	-	30	14.70	33.39	-	24.82	314.1	.104	
342	-	-	.66	-	-	-	-	50	11.92	33.36	-	25.35	263.2	.162	
353	7.46	-	.46	-	-	-	-	75	11.30	33.54	-	25.61	239.0	.225	
363	-	-	.59	-	-	-	-	100	10.75	33.64	-	25.78	222.3	.283	
373	-	-	.59	-	-	-	-	125	9.88	33.83	-	26.08	194.0	.335	
383	-	-	.54	-	-	-	-	150	9.63	33.89	-	26.17	185.6	.384	
393	7.06	-	.50	-	-	-	-	200	9.16	34.03	-	26.35	168.0	.474	
403	-	-	.47	-	-	-	-	250	8.60	34.14	-	26.53	151.4	.556	
413	-	-	.46	-	-	-	-	300	8.12	34.19	-	26.64	140.7	.631	
423	-	-	.42	-	-	-	-	400	6.95	34.24	-	26.85	121.0	.768	
433	6.82	-	.37	-	-	-	-								
443	-	-	.31	-	-	-	-								
453	-	-	.26	-	-	-	-								
463	6.71	34.244	.22	-	-	-	117.6								
468	6.69	34.248	.21	-	-	-	117.1								
471	-	-	.18	-	-	-	-								
474	-	-	.16	-	-	-	-								

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