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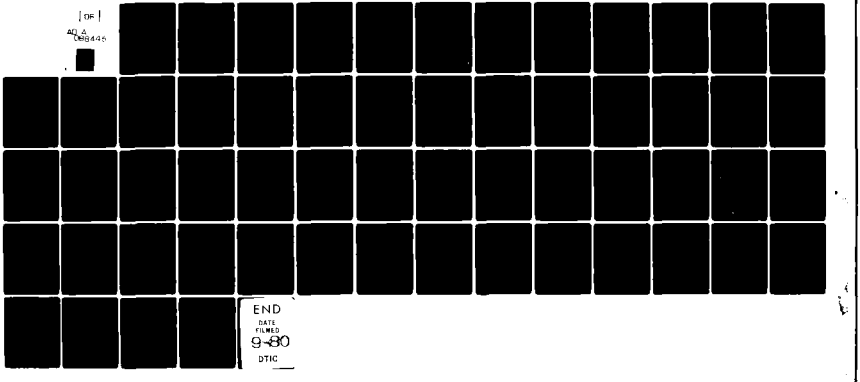

UNIVERSITY OF CALIFORNIA SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

PHYSICAL AND CHEMICAL DATA REPORT

SCAN Expedition Leg X
31 December 1969 - 28 January 1970

BIOS Expedition
27 March - 12 April 1970

7-TOW Expedition Legs V, VI, VII
22 April - 21 July 1970

SIO Reference 80-10
15 June 1980

unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report contains hydrographic data collected during three separate expeditions during 1970. They were SCAN Expedition Leg X, BIOS Expedition and 7-TOW Expedition Legs V, VI and VII. No hydrographic data was collected on other legs of the expeditions.

Preceding the tabulated data for each cruise are: (1) a description of the principal objectives and the hydrographic work carried out including all "non-standard" procedures; (2) the...

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

UNIVERSITY OF CALIFORNIA

SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

SCAN Expedition Leg X
31 December 1969 - 28 January 1970

Sponsored by
National Science Foundation

BIOS Expedition
27 March - 12 April 1970

Sponsored by
University of California

7-TOW Expedition Legs V, VI, VII
22 April - 21 July 1970

Sponsored by
Office of Naval Research
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SIO Reference 80-10
15 June 1980

Approved for distribution:

W. A. Nierenberg, Director

CONTENTS

INTRODUCTION

This report contains hydrographic data collected during three separate expeditions during 1970. They were SCAN Expedition Leg X, BIOS Expedition and 7-TOW Expedition Legs V, VI and VII. No hydrographic data was collected on other legs of the expeditions.

Preceding the tabulated data for each cruise are: (1) a description of the principal objectives and the hydrographic work carried out including all 'non-standard' procedures; (2) the sponsoring agency; (3) publications utilizing data from the expedition; (4) a list of scientific personnel participating in the collection of data; and (5) a station chart indicating the station positions.

STANDARD PROCEDURES

Hydrographic Cast Data

Temperature was measured using paired deep-sea reversing thermometers and all are reported to hundredths of a Celsius degree although for the deep levels a few specially scaled low range thermometers were read to thousandths of a degree. Most bottles below 100 meters included unprotected (pressure) thermometers for depth determination.

Water samples were obtained from Nansen bottles with SCAN Expedition also obtaining additional samples from Niskin bottles without thermometers.

Salinity for 7-TOW and SCAN was determined using a University of Washington (1960) conductive salinometer and for BIOS using a Bissett Berman (now Grundy Environmental Systems, Inc.) inductive salinometer.

Dissolved oxygen was determined by the Winkler method as modified by Carpenter (1965) using equipment and procedures outlined by Anderson (1971).

A standard Beckman Model DU Spectrophotometer was used in determining nutrients for 7-TOW and SCAN. Reactive phosphate was done using the method of Murphy and Riley (1962) and reactive silicate by the method of Strickland and Parsons (1968). For BIOS, reactive phosphate, silicate, nitrite and nitrate were determined using a first generation Technicon^{R} AutoAnalyzer^{R} and methods developed at National Marine Fisheries Service based on the methodologies of Strickland (1968).

The observed data have been evaluated using the method described by Klein (1973). This involves consideration of their variation as functions of density or depth and their relations to each other and comparison with adjacent observations.

Chlorophyll and phaeophytin for BIOS were determined fluorometrically according to the procedure of Yentsch and Menzel (1963) as modified by Holm-Hansen et al. (1965).

In Situ Salinity/Temperature/Depth Recorder (STD) Data

An STD was used on BIOS Expedition only. The analog recordings from a Bissett Berman (HYTECH) Model 9006 STD were digitized at standard depths with corrections determined by comparison with the Nansen bottle data.

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

TABULATED DATA

The time reported is Greenwich Mean Time. For STD lowerings it is the start down time and for bottle casts it is the time of messenger release. When more than one cast was lowered on a station, the messenger times for the first and last cast are given. Multiple casts, excluding the surface cast, are indicated by a letter following the observed depth. The time recorded for chlorophyll and phaeophytin is local standard time for the messenger release on the shallow cast.

Bottom depths, determined acoustically, have been corrected using Matthews (1939) tables and are reported in meters. Weather and dominant waves are coded using the National Oceanographic Data Center (NODC) method.

Data for all cruises presented in this report were obtained by bottle casts and by the STD, and appear in two forms:

1) Data from the sample bottle casts is tabulated with the observed levels of depth on the left of a page. When salinity samples were collected and analyzed for all observed levels, interpolated and computed values at standard levels of depth appear on the right of the page.

2) For each STD lowering, temperature and salinity values are read only at standard levels of depth and appear with computed values of DT and DD on the right of the page. Corrections have been applied to the temperature and salinity values as discussed previously in this report.

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* Now the Physical and Chemical Oceanographic Data Facility (PACODF).

The column headings are to be interpreted as follows:

Z	Depth	Meters
T	Temperature	°C
S	Salinity	‰
O2	Dissolved oxygen	ml/L
PO4	"Reactive" inorganic phosphate-phosphorous	µg at/L
SiO3	"Reactive" inorganic silicate-silicon	µg at/L
NO2	"Reactive" nitrite-nitrogen	µg at/L
NO3	"Reactive" nitrate-nitrogen	µg at/L
DT	δ_T Thermosteric anomaly	cl/ton
SIGT	$\sigma_t = (\rho_{s,t,0} - 1)10^3$ where $\rho_{s,t,0}$ is the density the parcel would have if moved isothermally to the sea surface.	g/L
DD	Geopotential anomaly, referred to the sea surface.	dyn. meters

FOOTNOTES

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

A, B, C and D: After depth value indicates successively deeper casts on expedition legs which have multiple cast stations. The upper cast originating at or near the surface has no letter following the depth.

K: Both protected thermometers in the sample bottle malfunctioned. The temperature was inferred from the pressure thermometer and wire depth.

P: After depth value indicates the Nansen bottles pretripped or posttripped. Data entered only when considered useable.

U: Uncertain value. Values which are not used in interpolation because they seem to be in error without apparent reason.

V: Because of time differences, overlapping casts show some differences. Values not used in interpolation.

SCAN EXPEDITION LEG X

The purposes of Leg X were: (1) to survey sites for the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES) program; (2) to measure the He^3 and He^4 flux from the crust in regions of high heat flow and tectonic activity; (3) to study the relationship between vertical eddy diffusivity as measured by excess radon and precise temperature gradients in bottom water, and (4) to make detailed geochemical sections across the East Pacific Rise and across the eastern Equatorial Current system.

Detailed heat-flow crossings were made of the Galapagos rift zone and East Pacific Rise to attempt to determine the width of the intrusive zone of both ridges.

The hydrographic work on this leg comprised 20 single or multiple-cast stations with as many as 22 bottles per cast. Most of the deeper casts were lowered as near the bottom as possible.

The nutrient samples were frozen and analyzed later ashore. Because of the variability in duplicate samples, none of the nutrients have been tabulated in this report.

Leg X of SCAN Expedition was funded by the National Science Foundation.

PUBLICATIONS UTILIZING SCAN EXPEDITION DATA

Anderson, R. N., and J. G. Sclater, 1972. Topography and evolution of the East Pacific between 5°S and 20°S. *Earth Planet. Sci. Lett., 16*: 433-441.

Sclater, J. G., R. N. Anderson and M. LeeBell, 1971. The elevation of ridges and the evolution of the central eastern Pacific. *J. Geophys. Res., 76*: 7888-7915.

Sclater, J. G., and V. D. Klitgard, 1973. A detailed heat flow, topographic and magnetic survey across the Galapagos Spreading center at 86°W. *J. Geophys. Res., 78*: 6951-6975.

PERSONNEL

SCAN Expedition Leg X

Ship's Captain:

Bonham, John W.	RV ARGO

Personnel Participating in the Collection of Data:

Craig, Harmon Dr.	Chief Scientist
Bradley, Douglas	Electronic Technician
Brennen, Robert E.	Marine Technician
Chung, Yu-chia	Graduate Student
Dixon, Fred S.	Marine Technician
Elston, Marvin D.	Associate Development Engineer
Holzapfel, Eugene	Ornithologist, Bishop Museum
Hubenka, Frank	Electronic Technician
Huffer, Robert P.	Marine Technician
Kroopnick, Peter M.	Graduate Student
Liebertz, Paul J.	Marine Technician
Rodgers, James E.	Maintenance Technician
Sclater, John G. Dr.	Research Physicist
Walsh, Thomas J.	Laboratory Technician
Weiss, Ray F.	Graduate Student

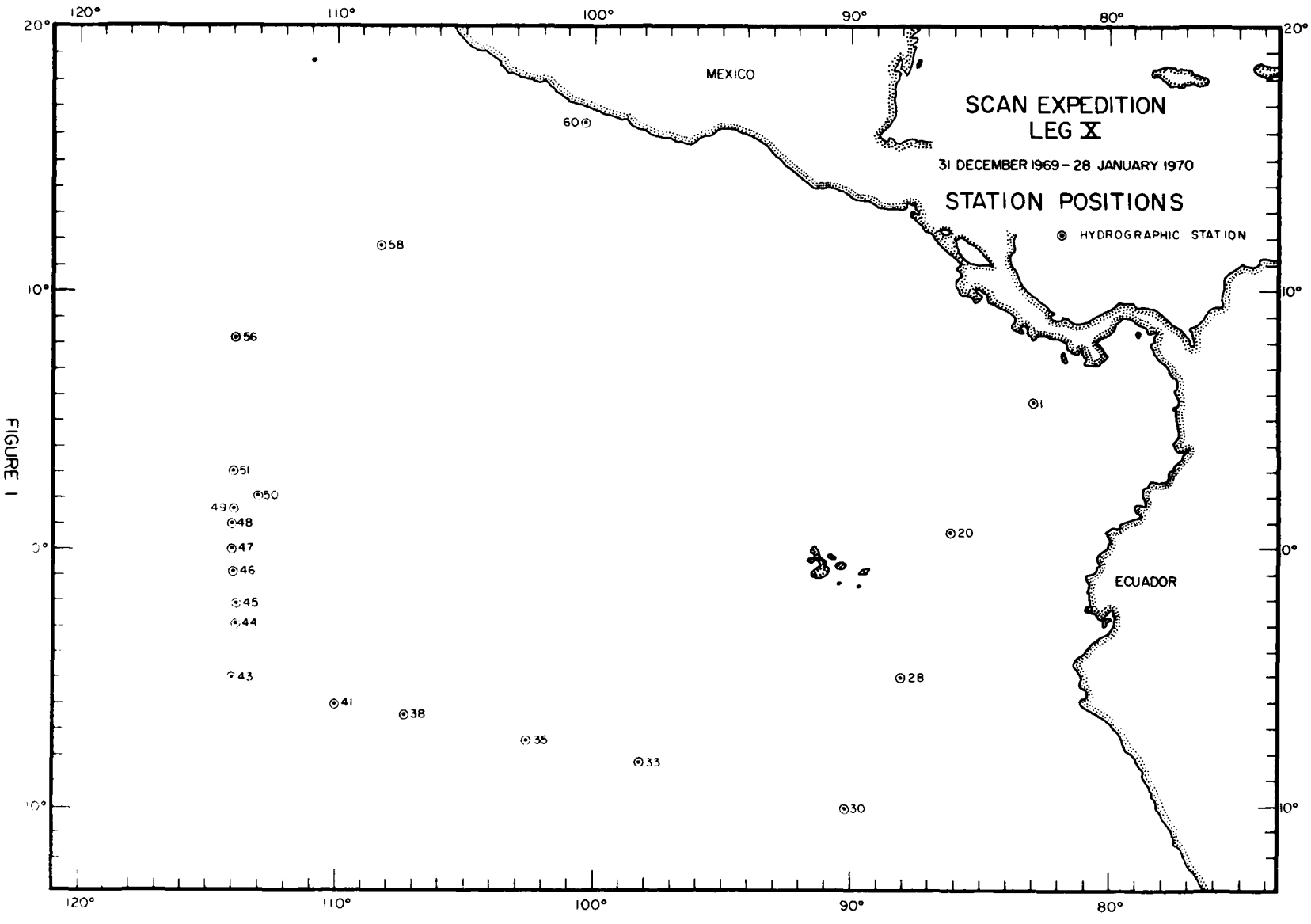
SCAN EXPEDITION
LEG X
31 DECEMBER 1969 – 28 JANUARY 1970
STATION POSITIONS
HYDROGRAPHIC STATION
MEXICO
ECUADOR
120°
110°
100°
90°
80°
20°
10°
0°
10°
60
58
56
51
50
49
48
47
46
45
44
43
41
38
35
33
30
28
20
1

FIGURE 1

RV ARGO SCAR EXPEDITION LEG X 1

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
S 43.5N	82 57.5W	12/31/69	2017 GMT	3000M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DL
2887		34.660													
2967		34.665													
2987		34.661													

RV ARGO SCAR EXPEDITION LEG X 20

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
0 36.0N	86 07.0W	1/ 5/70	0108 0810 GMT	2724M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DL
1	24.94	33.634	4.93					549.5	0	24.94	33.634	4.93	22.351	549.5	0.000
9	24.95	33.625	4.91					550.4	10	24.94	33.629	4.91	22.348	549.9	0.055
24	24.73	33.660	4.91					541.6	20	24.79	33.652	4.91	22.409	544.0	0.110
49	19.67	34.881	3.15					293.5	30	23.24	33.976	4.50	23.110	477.0	0.161
74	17.29	34.915	2.68					258.9	50	18.46	34.884	3.13	25.088	286.3	0.238
97	16.39	34.929	2.37					237.5	75	17.24	34.916	2.84	25.418	256.9	0.346
127	15.09	34.958	2.22					207.5	100	16.25	34.931	2.35	25.656	234.3	0.368
154	14.33	34.958	1.96					191.2	125	15.17	34.946	2.42	25.919	209.3	0.425
225	13.67	34.921	2.15					191.5	150	14.46	34.960	2.01	26.078	194.2	0.476
274	12.26	34.835	0.39					160.2	200	13.66	34.941	2.09	26.169	183.6	0.573
303	11.73	34.798	0.34					153.9	250	12.90	34.673	1.15	26.333	169.9	0.665
333	10.76	34.75	0.23					140.8	300	11.79	34.602	0.35	26.494	154.7	0.749
350A	10.13		0.20						400	9.40	34.681	0.21	26.823	123.5	0.896
372	9.73	34.674	0.19					129.2	500	8.04	34.605	0.42	26.976	108.8	1.021
401	9.39	34.681	0.21					123.3	600	7.03	34.567	0.64	27.093	97.9	1.133
499	8.05	34.604	0.42					109.0	700	6.50	34.551	0.89	27.154	92.1	1.238
603	7.01	34.565	0.85					97.4	800	5.54	34.538	1.13	27.265	81.6	1.335
701	6.50								1000	4.71	34.551	1.51	27.357	72.8	1.510
854	5.33	34.529	1.26					79.7	1200	3.76	34.552	1.76	27.476	61.6	1.666
859B	5.36	34.531	1.27					79.9	1500	2.99	34.560	1.90	27.571	52.6	1.868
894A	5.14								1750	2.60	34.593	2.09	27.617	48.1	2.019
958A	4.91	34.526	1.37					75.1	2000	2.30	34.610	2.30	27.656	44.5	2.160
1004	4.69		1.52						2250	2.08	34.620	2.39	27.682	42.1	2.294
1056B	4.45	34.538	1.40					69.6	2500	2.04	34.629	2.44	27.698	41.5	2.425
1154B	3.89	34.551	1.70					62.9							
1253B	3.66	34.550	1.80					60.7							
1451A	3.09	34.573	1.88					55.8							
1648A	2.76	34.590	1.98					49.7							
1844A	2.47	34.596	2.19					46.8							
2040A	2.26	34.613						43.9							
2237A	2.09	34.619	2.39					42.1							
2434A	2.04	34.620	2.43					41.7							
2724A	2.05	34.63	2.46					41.0							

RV ARGO SCAR EXPEDITION LEG X 28

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
S 00.5S	38 03.0W	1/ 8/70	0218 GMT	3687M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DL
3557		34.687	3.18												
3597		34.661	3.15												
3637		34.661	3.13												
3644		34.683	3.15												
3664		34.693	3.14												
3671		34.686	3.14												

RV ARGO — SCAN EXPEDITION, LEG X — 30

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME GMT	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
10 03.0S	90 14.0W	1/ 9/70	2042 1021	4162M				

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DC
9	23.21	35.595	5.23					359.2	0	23.21	35.60		24.347	350.8	0.000
10A			4.97						10	23.20	35.595	4.97	24.348	350.8	0.036
20A			5.00						20	23.06	35.601	5.00	24.392	354.5	0.072
28	22.95	35.607	5.10					351.2	30	22.75	35.603	5.07	24.481	346.0	0.107
52	19.98	35.512	4.78					279.9	50	20.28	35.522	4.81	25.105	286.7	0.170
81	16.77	35.163	3.60					229.0	75	17.41	35.245	3.95	25.621	237.6	0.236
106	14.07	34.882	1.19					192.1	100	14.65	34.935	1.76	26.018	199.9	0.292
135	12.86	34.855	0.11					170.5	125	13.13	34.848	0.31	26.268	176.2	0.340
159	12.26	34.855	0.13					159.3	150	12.45	34.854	0.12	26.408	162.8	0.383
189	11.84	34.84	0.12					152.8	200	11.68	34.837	0.20	26.542	150.1	0.463
199A			0.19						250	11.04	34.822	0.29	26.650	139.9	0.538
212	11.51	34.835	0.26					147.2	300	10.48	34.787	0.28	26.722	133.1	0.610
271	10.80	34.811	0.30					136.7	400	9.49	34.716	0.24	26.843	121.5	0.745
319	10.28	34.770	0.27					131.0	500	8.19	34.640	0.29	26.983	108.3	0.868
397A			0.24						600	7.11	34.582	0.31	27.095	97.7	0.981
425	9.17	34.699	0.28					118.5	700	6.21	34.561	0.43	27.200	87.8	1.083
538	7.80	34.618	0.30					104.4	800	5.50	34.551	0.72	27.281	80.1	1.177
636	6.79	34.567	0.32					94.6	1000	4.41	34.527	1.28	27.389	68.4	1.346
691A			0.41						1200	3.72	34.574	1.66	27.497	59.8	1.494
741	5.88	34.56	0.54					83.8	1500	2.96	34.599	2.02	27.590	50.8	1.690
848	5.23	34.544	0.86					77.4	1750	2.54	34.628	2.25	27.650	45.1	1.836
906F	4.88	34.547	1.01					73.3	2000	2.25	34.651	2.48	27.694	41.0	1.968
909C	4.84	34.541	0.98					73.4	2250	2.04	34.660	2.64	27.718	38.8	2.093
953	4.66	34.545	1.31					71.1	2500	1.87	34.667	2.80	27.736	36.9	2.214
991A			1.30						2750	1.84	34.677	2.95	27.747	35.9	2.331
999A	4.40	34.547						68.3	3000	1.79	34.680	3.11	27.752	35.4	2.448
1005C	4.44	34.542	1.27					69.1	3250	1.79	34.687	3.22	27.759	34.8	2.566
1059	4.21	34.556	1.55					65.6	3500	1.78	34.689	3.33	27.761	34.6	2.685
1102C	4.06	34.554	1.47					64.3	3750	1.79	34.689	3.34	27.760	34.7	2.806
1198A	3.73	34.571						59.8	4000	1.80	34.691	3.36	27.761	34.6	2.929
1247C	3.58	34.569	1.60					58.5							
1344C	3.35	34.579	1.87					55.7							
1479A			2.00												
1588C	2.77	34.609	2.10					48.3							
1832C	2.45	34.655	2.33					43.7							
1972A			2.47												
1981A	2.26	34.65						41.1							
2076C	2.20	34.649	2.49					40.7							
2321C	1.98	34.664	2.71					37.9							
2567C	1.86	34.670	2.86					36.6							
2617			2.94												
2622	1.87	34.677	2.90					36.1							
2812C	1.81	34.675	2.96					35.9							
2953A			3.09												
3058C	1.79	34.680	3.12					35.3							
3304C	1.79	34.688	3.25					34.7							
3452A			3.31												
3462A	1.78	34.689						34.5							
3549C	1.78	34.687	3.35					34.7							
3745A			3.34												
3754A	1.79	34.688						34.7							
3795C	1.79	34.690	3.32					34.9							
3991C	1.80														
4032C			3.37												
4072A			3.38												
4101A			3.37												
4121A			3.36												
4136A			3.36												
4138C	1.82	34.692	3.33					34.8							
4146A			3.180												
4187C	1.83	34.690	3.34					34.8							

RV ARGO — SCAN EXPEDITION, LEG X — 33

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME GMT	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
0 10.0S	98 14.0W	1/12/70	1725 GMT					

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DC
702E	5.99	34.567						84.6	800	5.38	34.55		27.299	78.4	0.000
898	4.87	34.549						73.1	1000	4.48	34.55		27.402	68.6	0.167
1093	4.18	34.56						65.1	1200	3.79	34.57		27.482	61.0	0.317
1286	3.50	34.568						57.4	1500	2.92	34.59		27.590	50.9	0.516
1478	2.96	34.59						51.4	1750	2.53	34.62		27.643	45.8	0.661
1767	2.51	34.618						45.5	2000	2.27	34.66		27.699	40.5	0.794
2054	2.22	34.667						39.5	2250	2.04	34.68		27.730	37.5	0.917
2341	1.97	34.675						37.0	2500	1.88	34.68		27.744	36.1	1.035
2629	1.83	34.68						35.6	2750	1.79	34.68		27.752	35.4	1.151
2918	1.75								3000	1.75	34.68		27.756	35.0	1.267
3208	1.76	34.698	U						3250	1.76	34.69		27.760	34.7	1.385
3499	1.78	34.692						34.9	3500	1.78	34.69		27.764	34.3	1.503
3696		34.687							3750	1.80	34.69		27.761	34.5	1.624
3735		34.694													
3764		34.692													
3784		34.689													
3795		34.69													
3800	1.80	34.690						34.-							

E) NO SOUNDING WAS RECORDED AT THE TIME OF THE CAST. AT THE ESTIMATED TRIPPING TIME OF THE DEEPEST BOTTLE, THE BOTTLE TO BOTTOM DISTANCE WAS 22 METERS.

RV ARGO — SCAN EXPEDITION LEG X — 55

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM
7 28.5S	102 38.0W	1/13/70	2230 GMT	4124M

Z	T	S	O2	PO4	SiO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
897	4.85	34.556						72.3	1000	4.52	34.572		27.411	67.7	0.000
994	4.54	34.57						68.0	1200	3.74	34.580		27.500	59.3	0.148
1100	4.10	34.567						63.7	1500	2.92	34.622		27.612	48.7	0.340
1383	3.19	34.609						52.0	1750	2.53	34.641		27.662	43.9	0.481
1676	2.62	34.635						45.1	2000	2.26	34.656		27.696	40.7	0.612
1968	2.30	34.654						41.1	2250	2.01	34.670		27.728	37.7	0.735
2261	2.00	34.67						37.6	2500	1.87	34.678		27.745	36.0	0.853
2554	1.85	34.680						35.7	2750	1.80	34.683		27.755	35.1	0.968
2856	1.78	34.684						34.9	3000	1.77	34.684		27.758	34.9	1.084
3140	1.76	34.683						34.9	3250	1.76	34.684		27.759	34.8	1.200
3433	1.76	34.685						34.7	3500	1.76	34.686		27.760	34.7	1.319
3726	1.77	34.686						34.7	3750	1.77	34.686		27.760	34.7	1.439
4029	1.79	34.683						35.1	4000	1.79	34.684		27.756	35.0	1.562

RV ARGO — SCAN EXPEDITION LEG X — 38

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM
6 29.5S	107 24.0W	1/14/70	1305 1847 GMT	3167M

Z	T	S	O2	PO4	SiO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
10	25.05	35.31	5.05					431.9	0	25.1	35.31		23.966	433.4	0.000
111	18.26	35.44	3.51					243.2	10	25.05	35.31	5.05	23.981	431.9	0.043
207	11.70	34.88	0.53					147.3	20	24.64	35.333	4.97	25.724	416.3	0.086
299	10.61	34.817	0.62					133.0	30	24.16	35.351	4.87	25.879	403.5	0.127
407	9.44	34.741	0.30					119.6	50	23.05	35.375	4.64	26.223	370.7	0.205
521	8.36	34.679	0.34					107.9	75	21.34	35.394	4.25	26.719	323.4	0.292
767	5.96	34.574	1.12					83.7	100	19.28	35.420	3.76	26.289	269.2	0.367
871A	4.91	34.552	1.75					73.3	125	17.13	35.342	3.02	25.763	224.1	0.430
973A	4.39	34.56	1.92					67.2	150	15.27	35.188	2.20	26.076	194.3	0.485
1021	4.20	34.570	2.00					64.5	200	12.09	34.917	0.72	26.527	151.5	0.572
1075A	4.05	34.566	2.00					63.3	250	11.19	34.848	0.57	26.642	140.6	0.648
1104	3.89	34.580	2.11					60.7	300	10.60	34.816	0.62	26.724	132.9	0.719
1174A	3.70	34.578	2.15					59.0	400	9.52	34.747	0.32	26.855	120.4	0.853
1210	3.51	34.595	2.18					55.9	500	8.37	34.680	0.34	26.986	108.0	0.976
1459F			2.29						600	7.13	34.619	0.65	27.120	95.3	1.087
1470F	2.97	34.609 E						50.0	700	6.03	34.578	1.09	27.235	84.4	1.187
1487A	2.92	34.618	2.40					48.9	800	5.30	34.557	1.50	27.311	77.3	1.277
1695A	2.63	34.627	2.39					45.8	1000	4.28	34.569	1.97	27.455	65.6	1.440
1749F			2.45						1200	3.56	34.593	2.17	27.528	56.8	1.582
2030A	2.27	34.652	2.55					41.0	1500	2.89	34.619	2.40	27.612	48.7	1.770
2037F			2.58						1750	2.61	34.638	2.45	27.652	44.8	1.912
2046E	2.22	34.648 E						40.9	2000	2.33	34.653	2.54	27.689	41.3	2.046
2134E			2.73						2250	2.12	34.663	2.71	27.714	39.1	2.173
2228A	2.14	34.662	2.68					39.3	2500	1.90	34.672	3.11	27.738	36.8	2.294
2573A		34.675	3.22						2750	1.81	34.693	3.40	27.762	34.5	2.411
2583A	1.83		3.04						3000	1.79	34.700	3.27	27.749	35.8	2.527
2616F			3.21												
2868A	1.79	34.705	3.20					33.4							
3000A		34.70	3.27												
3004F	1.79	34.672						35.9							
3039A		34.692	3.22												
3066A		34.687	3.30												
3086A		34.683	3.22												
3096A		34.703	3.22												
3102A	1.80	34.694	3.18					34.3							

RV ARGO — SCAN EXPEDITION LEG X — 41

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM
6 00.5S	110 03.0W	1/16/70	1545 GMT	3527M

Z	T	S	O2	PO4	SiO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
738	5.59	34.570						79.6	800	5.23	34.563		27.324	76.0	0.000
837	5.04	34.561						74.0	1000	4.41	34.570		27.422	66.7	0.162
950	4.60	34.565						69.6	1200	3.70	34.588		27.510	58.4	0.308
1142	3.89	34.581						60.6	1500	2.93	34.618		27.608	49.1	0.499
1459	3.01	34.613						50.1	1750	2.51	34.640		27.663	43.9	0.640
1704	2.58	34.634						44.9	2000	2.20	34.661		27.705	39.9	0.770
1971	2.23	34.659						40.2	2250	2.02	34.672		27.729	37.6	0.892
2247	2.02	34.671						37.7	2500	1.86	34.686		27.752	35.5	1.009
2503	1.86	34.685						35.4	2750	1.79	34.686		27.758	34.9	1.123
2744	1.79	34.685						34.4	3000	1.71	34.690		27.767	34.0	1.236
3032	1.70	34.690						33.9	3250	1.56	34.699		27.785	32.3	1.346
3275	1.55	34.699						32.2	3500	1.56	34.705		27.790	31.8	1.454
3528	1.56	34.705						31.8							

E) SALINITY SAMPLES AT 1470 AND 2046 METERS APPEAR TO HAVE BEEN REVERSED. THEY ARE ASSUMED TO NOW BE IN THE CORRECT ORDER.

RV ARGO SCAN EXPEDITION LEG X

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
5 00.5S	114 03.5W	1/17/70	1908 0510 GMT	4200M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
19	25.46	35.053	4.85					462.4	0	25.5	35.05		23.247	463.6	0.000
102	18.08	35.408	2.98					241.2	10	25.48	35.051		23.255	463.1	0.046
206	12.80	34.942	0.31					163.0	20	25.40	35.056	4.83	23.283	460.4	0.093
299	11.98		0.17						30	24.74	35.085	4.62	23.506	439.1	0.138
406	10.04	34.779	0.19					126.4	50	23.23	35.147	4.18	24.000	392.0	0.221
495	8.64	34.692	0.45					111.0	75	20.97	35.244	3.61	24.707	324.7	0.311
706	6.02	34.573	1.05					84.5	100	18.51	35.392	3.03	25.514	247.8	0.364
809	5.19	34.566	1.70					75.3	125	16.52	35.310	2.29	25.883	212.7	0.442
820A	5.17	34.566	1.58					75.1	150	15.08	35.210	1.61	26.133	188.9	0.493
918A	4.61	34.565	1.94					69.1	200	12.98	34.976	0.43	26.396	163.9	0.564
978B	4.38	34.572						66.2	250	12.25	34.507	0.24	26.491	154.9	0.667
1011	4.24	34.571	2.06					64.8	300	11.96	34.965	0.17	26.588	145.8	0.745
1010A	4.28	34.573	2.02					65.1	400	10.16	34.790	0.19	26.781	127.5	0.890
1201	3.68	34.590	2.18					57.9	500	8.57	34.688	0.46	26.963	110.2	1.018
1219A	3.71	34.60	2.16					57.4	600	7.20	34.617	0.69	27.110	96.3	1.130
1516	3.03	34.624	2.20					49.4	700	6.08	34.576	1.05	27.228	85.1	1.231
1521A	3.03	34.624	2.19					49.4	800	5.23	34.570	1.64	27.328	75.6	1.321
1721A	2.63 E	34.637	2.39					45.0	1000	4.26	34.579	2.05	27.445	65.1	1.481
1900B	2.86	34.655						41.5	1200	3.69	34.591	2.18	27.514	58.0	1.625
2022A	2.28	34.659	2.58					40.6	1500	3.08	34.634	2.20	27.607	49.7	1.817
2219A	2.05	34.674	2.70					37.7	1750	2.58	34.642	2.41	27.658	44.4	1.960
2417B	1.91	34.680						36.2	2000	2.29	34.659	2.57	27.696	40.7	2.092
2525A	1.87	34.684	2.94					35.6	2250	2.02	34.676	2.72	27.732	37.4	2.216
2729A	1.79	34.695	3.09					34.2	2500	1.88	34.684	2.92	27.749	35.7	2.333
3054A	1.67	34.698	3.27					33.1	2750	1.78	34.696	3.10	27.766	34.1	2.446
3219B	1.59								3000	1.68	34.698	3.25	27.776	33.2	2.557
3235A	1.59	34.700	3.42					32.4	3250	1.59	34.701	3.43	27.785	32.3	2.666
3554A	1.50	34.712	3.62					30.8	3500	1.52	34.711	3.60	27.798	31.0	2.773
3711B	1.47	34.701						31.5	3750	1.46	34.714	3.63	27.805	30.5	2.878
3749A	1.46	34.713	3.63					30.5	4000	1.46	34.712	3.80	27.803	30.6	2.984
4043A	1.46	34.711	3.83					30.6							
4074A			3.77												
4113A			3.78												
4142?			3.79												
4162A		34.703	3.77												
417?A		34.700	3.79												
4187A		34.70	3.78												
4199A	1.48		3.75												

RV ARGO SCAN EXPEDITION LEG X

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
? 55.0S	113 58.0W	1/18/70	2016 GMT	4242M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
10	[illegible]	34.587	4.82					484.9	0	25.1	34.59		23.023	485.2	0.000
2?	25.02	34.577						483.9	10	25.08	34.587	4.82	23.027	484.9	0.049
4?	25.22	34.844	4.81					470.4	20	25.03	34.578	4.82	23.033	484.3	0.097
66	22.71	35.054	4.19					384.5	30	25.04	34.606	4.81	23.052	482.4	0.145
94	14.93	35.063	1.91					196.5	50	25.04	34.948	4.75	23.341	454.8	0.240
147	13.74	35.012	1.55					176.0	75	20.20	34.059	3.47	24.013	390.8	0.346
195	13.20	34.976	1.45					169.7	100	14.80	35.056	1.87	26.078	194.1	0.420
243	12.92	34.951	0.71					164.6	125	14.23	35.031	1.70	26.180	184.5	0.468
29?	12.20	34.902	0.10					154.7	150	13.70	35.009	1.55	26.275	175.5	0.514
343	11.39	34.860	0.11					143.3	200	13.25	34.974	1.37	26.341	169.2	0.602
392	10.38	34.797	0.12					130.7	250	12.84	34.945	0.60	26.401	163.5	0.688
489	8.53	34.684						110.6	300	12.12	34.697	0.10	26.505	153.6	0.771
590	7.18	34.626	0.78					95.3	400	10.21	34.766	0.14	26.768	128.7	0.921
687	6.31	34.595						86.4	500	8.39	34.676	0.45	26.987	107.9	1.048
789	5.65	34.578	1.32					79.7	600	7.08	34.623	0.81	27.132	94.2	1.158
887	5.13	34.571						74.3	700	6.22	34.594	1.09	27.225	85.4	1.258
991	4.68	34.570	1.79					69.5	800	5.59	34.579	1.35	27.292	79.0	1.350
									1000	4.65	34.570		27.396	69.2	1.519

RV ARGO SCAN EXPEDITION LEG X

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
2 09.0S	113 57.5W	1/19/70	0215 GMT	4295M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
10	24.77	34.597	4.72					475.?	0	24.8	34.60		23.121	475.8	0.000
30	24.38	34.696						456.9	10	24.77	34.597	4.72	23.128	475.2	0.048
49	24.35	34.907	4.31					440.?	20	24.58	34.681	4.61	23.210	467.4	0.095
79	20.30	35.142	3.11					314.?	30	24.38	34.698	4.51	23.320	456.9	0.141
98	16.94	35.109	1.07					236.7	50	24.27	34.918	4.26	23.522	437.6	0.231
152	13.41	34.950	1.57					174.1	75	21.03	35.119	3.32	24.597	335.1	0.328
202	12.67	34.909	1.13					166.7	100	16.70	35.130	1.86	25.680	232.0	0.400
251	12.46	34.882	0.40					161.?	125	14.43	35.020	1.72	26.129	189.3	0.453
305	11.86	34.646	0.38					152.7	150	13.43	34.950	1.56	26.265	176.?	0.500
354	10.13	34.741	0.95					130.7	200	12.69	34.913	1.15	26.364	167.0	0.567
403	9.18	34.685	0.87					119.7	250	12.47	34.882	0.41	26.426	161.1	0.672
501	8.28	34.633						110.1	300	11.95	[illegible]	0.38	26.502	[illegible]	[illegible]
604	6.89	34.565	1.45					96.?	400	9.22	[illegible]	0.87	26.858	[illegible]	[illegible]
703	6.19	34.549						88.7	500	8.29	34.535	1.0?	26.963	[illegible]	[illegible]
806	5.40	34.543	1.95					75.?	600	[illegible]	[illegible]	1.43	[illegible]	[illegible]	1.13?
905	4.91	34.548						73.?	700	6.21	34.546	1.72	27.1??	[illegible]	1.238
1008	4.38	34.545	2.04					6?.?	800	5.49	[illegible]	1.94	27.2??	[illegible]	1.33?
									1000	4.4?	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

E) ALTERNATE VALUE, 2.77 DEGREES.

RV ARGO — SCAN EXPEDITION, LEG X — 46

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
0 56.0S	114 00.5W	1/19/70	1212 GMT	4270M				

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
10	23,89	34,577	4,42					451,[illegible]	0	23,9	34,58		23,375	451,7	0,000
30	22,55	34,633	4,01					410,[illegible]	10	23,89	34,577	4,42	23,375	451,6	0,045
49	21,65	34,980	3,70					381,4	20	23,50	34,580	4,20	23,547	435,2	0,090
69	20,08	35,577	2,81					277,7	30	22,55	34,633	4,01	23,805	410,6	0,132
84	17,72	35,416	2,52					232,2	50	21,59	34,016	3,66	24,365	357,2	0,209
124	15,29	35,159	2,03					197,[illegible]	75	19,38	34,564	2,69	25,373	261,1	0,267
163	13,93	35,03	1,68					176,[illegible]	100	16,78	34,307	2,35	25,846	217,2	0,347
202	12,66		2,04						125	15,25	35,155	2,02	26,055	196,4	0,400
252	12,26	34,862	1,34					157,[illegible]	150	14,30	34,066	1,75	26,193	183,3	0,446
301	11,68	34,860	0,91					144,4	200	12,71	34,912	2,02	26,401	163,5	0,538
404	9,79	34,742	0,52					125,1	250	12,26	34,881	1,38	26,465	157,4	0,621
502	8,23	34,645						108,5	300	11,76	34,863	0,59	26,548	149,5	0,701
604	7,01	34,602	1,02					96,8	400	9,87	34,708	0,52	26,796	126,1	0,847
702	5,99	34,567						84,6	500	8,26	34,648	0,71	26,978	108,8	0,973
805	5,53	34,558	1,66					79,[illegible]	600	7,05	34,605	1,01	27,120	95,5	1,084
903	5,29	34,573						75,9	700	6,01	34,569	1,55	27,232	84,7	1,184
1002	4,66	34,57	2,03					69,3	800	5,54	34,558	1,64	27,282	80,0	1,276
									1000	4,72	34,573	2,02	27,389	69,9	1,447

RV ARGO — SCAN EXPEDITION, LEG X — 47

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
0 00.0	114 02.0W	1/19/70	1857 GMT	4115M				

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
5	25,88	34,201	4,69					536,1	0	25,88	34,201	4,69	22,491	536,1	0,000
20	25,25	34,507	4,51					438,3	10	25,36	34,249	4,59	22,715	514,7	0,055
40	20,03	34,765	3,12					335,3	20	24,37	34,404	4,44	23,101	477,8	0,102
67	16,01	34,857	2,74					234,5	30	23,09	34,523	4,25	23,369	435,1	0,148
87	14,23	34,867	2,43					196,4	50	19,57	34,776	3,06	24,722	323,2	0,229
121	13,83	34,903	2,39					184,8	75	15,08	34,869	2,60	25,875	213,7	0,291
160	13,18	34,935	2,60					170,8	100	14,08	34,880	2,41	26,097	192,4	0,345
199	12,96	34,946	2,32					165,7	125	13,76	34,906	2,42	26,184	184,1	0,391
249	12,18	34,902	1,28					154,4	150	13,34	34,927	2,56	26,288	174,3	0,436
303	11,66	34,857	0,49					148,3	200	12,95	34,945	2,30	26,380	165,5	0,524
352	9,55		0,53						250	12,18	34,902	1,26	26,498	154,3	0,607
401	8,97	34,702	0,60					115,2	300	11,71	34,863	0,52	26,558	148,7	0,686
500	7,85	34,670						101,2	400	8,97	34,699	0,60	26,906	115,6	0,826
604	7,12	34,609	1,01					95,8	500	7,85	34,670	0,77	27,058	101,2	0,942
703	5,95	34,576						83,4	600	7,15	34,613	1,00	27,113	96,0	1,050
807	5,46	34,569	1,71					78,2	700	5,98	34,578	1,37	27,242	83,8	1,150
906	5,11	34,565						74,5	800	5,48	34,570	1,69	27,299	78,4	1,240
1008	4,84	34,572	1,67					71,0	1000	4,85	34,572	1,67	27,374	71,2	1,411

RV ARGO — SCAN EXPEDITION, LEG X — 48

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
1 00.0N	114 02.0W	1/20/70	0145 GMT	4017M				

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
5	26,37	34,062	4,92					560,4	0	26,37	34,062	4,92	22,233	560,8	0,000
30	25,90	34,165	4,79					539,[illegible]	10	26,25	34,090	4,89	22,492	535,2	0,056
49	22,29	34,625	3,94					404,1	20	26,07	34,128	4,84	22,574	547,3	0,111
69	16,85	34,875	2,39					251,7	30	25,90	34,165	4,79	22,657	539,3	0,165
89	15,24	34,989	2,04					208,4	50	21,99	34,638	3,66	23,965	395,4	0,259
123	14,14	34,983	1,82					187,1	75	16,13	34,922	2,41	25,682	231,8	0,330
163	13,21	34,936	2,06					171,[illegible]	100	14,77	34,804	1,92	26,043	197,[illegible]	0,392
202	12,67	34,904	1,07					163,[illegible]	125	14,13	34,941	1,84	26,163	186,1	0,441
256	11,87	34,841	0,61					153,2	150	13,49	34,955	2,02	26,275	175,4	0,487
304	11,02	34,801	0,43					141,2	200	12,69	34,905	1,13	26,400	163,[illegible]	0,575
401	9,18	34,699	0,51					118,7	250	11,87	34,841	0,61	26,509	153,2	0,657
497	8,39	34,656						110,[illegible]	300	11,08	34,801	0,43	26,627	142,1	0,734
599	7,20	34,604	1,02					97,[illegible]	400	9,20	34,701	0,51	26,872	118,9	0,872
696	6,30	34,574						87,[illegible]	500	8,36	34,655	0,74	26,969	109,[illegible]	0,995
799	5,72	34,563	1,51					81,[illegible]	600	7,19	34,605	1,02	27,101	97,1	1,108
897	5,30	34,562						76,[illegible]	700	6,27	34,575	1,29	27,202	87,6	1,210
1005	4,76	34,571	1,67					70,3	800	5,72	34,563	1,51	27,265	81,6	1,304
									1000	4,78	34,572	1,67	27,382	70,5	1,478

RV ARGO — SCAN EXPEDITION, LEG X — 49

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
1 30.0N	114 00.0W	1/21/70	0055 GMT	3827M				

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
3671		34,708	3,38												
3720		34,697	3,54												
3760		34,705	3,55												
3780		34,708	3,54												
3803		34,698	3,66												
3815		34,70	3,55												

RV ARGO — SCAN EXPEDITION LEG X — 50

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
2 02.0N	113 05.0W	1/21/70	1655 GMT	5812M	120	12KT		110 4 7

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT
9	26.07	34.096	4.85					549.4
28	26.06	34.099	4.80					548.7
62	22.66	34.676	3.93					410.4
78	15.59	34.990	2.15					215.7
97	14.64	35.011	1.88					194.3
150	13.49	34.950	1.41					175.7
198	12.85	34.916	1.05					165.8
247	12.25	34.88	0.80					157.3
300	11.17	34.797	0.62					144.1
348	10.08	34.730	1.01					130.7
396	8.76	34.69	0.55					113.0
495	7.89	34.633						104.5
594	6.82	34.591	1.19					93.2
691	6.38	34.578						86.8
795	5.58	34.549	1.77					81.1
893	5.08	34.571						73.7
997	4.64	34.571	1.68					69.0

Z	T	S	O2	SIGT	DT	DC
0	26.1	34.10		22.346	550.0	0.000
10	26.07	34.097	4.85	22.353	549.3	0.055
20	26.06	34.099	4.82	22.356	549.1	0.110
30	25.66	34.140	4.75	22.441	539.9	0.165
50	23.86	34.500	4.24	23.326	456.3	0.264
75	16.94	34.899	2.46	25.471	251.9	0.354
100	14.54	34.810	1.85	26.098	192.3	0.410
125	13.87	34.980	1.60	26.226	180.1	0.457
150	13.49	34.950	1.41	26.273	175.7	0.502
200	12.85	34.914	1.04	26.360	165.8	0.590
250	12.20	34.875	0.79	26.474	156.6	0.674
300	11.17	34.797	0.62	26.606	144.1	0.752
400	8.70	34.684	0.56	26.938	112.6	0.888
500	7.81	34.630	0.89	27.032	103.7	1.004
600	6.79	34.592	1.21	27.146	92.8	1.111
700	6.31	34.576	1.54	27.198	87.9	1.211
800	5.55	34.559	1.77	27.275	80.7	1.306
1000	4.63	34.571	1.68	27.399	68.9	1.476

RV ARGO — SCAN EXPEDITION LEG X — 51

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
3 01.0N	114 00.0W	1/22/70	0127 GMT	3772M	130	11KT	1	130 4 7

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT
10	26.28	34.035	4.87					560.0
29	26.22	34.061	4.82					556.3
49	25.97	34.262	4.74					534.4
74	21.38	34.653	3.51					378.0
98	15.43	35						211.1
152	13.73	34.959	1.73					179.7
201	13.13	34.930	1.35					170.2
250	12.46	34.884	0.80					160.9
304	11.65	34.820	0.80					150.8
353	10.98	34.79	1.12					141.3
402	10.00	34.728	0.44					129.5
501	8.29	34.640						109.7
604	6.86	34.587	1.16					94.0
702	6.12	34.569						86.0
805	5.56		1.63					
904	4.98	34.558						73.6
1007	4.51	34.571	1.64					67.6

Z	T	S	O2	SIGT	DT	DC
0	26.3	34.04		22.439	560.2	0.000
10	26.28	34.035	4.87	22.441	560.0	0.056
20	26.26	34.059	4.85	22.462	558.1	0.112
30	26.21	34.072	4.82	22.491	555.3	0.168
50	25.85	34.278	4.70	22.558	529.7	0.277
75	21.12	34.665	3.47	24.228	370.3	0.390
100	15.37	35.104	2.66	25.912	216.0	0.465
125	14.58	34.978	2.09	26.065	195.4	0.514
150	13.79	34.960	1.75	26.218	180.9	0.562
200	13.14	34.930	1.36	26.336	170.3	0.653
250	12.46	34.884	0.80	26.429	160.9	0.738
300	11.71	34.824	0.80	26.527	151.6	0.820
400	10.04	34.731	0.47	26.754	130.0	0.969
500	8.31	34.642	0.79	26.966	109.9	1.098
600	6.91	34.590	1.15	27.129	94.5	1.209
700	6.15	34.571	1.43	27.217	86.1	1.309
800	5.59	34.571	1.62	27.286	79.6	1.402
1000	4.64	34.571	1.64	27.408	68.0	1.570

RV ARGO — SCAN EXPEDITION LEG X — 56

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
4 07.0N	114 54.8W	1/25/70	1817 GMT	4029M	100	18KT		

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT
15		33.779	4.76					
108	12.33	34.827	0.44					162.7
226	11.01	34.766	0.74					143.6
324	10.04	34.717	0.63					131.0
440	9.00	34.671	0.31					118.0
539	7.85	34.618	0.14					105.1
646	6.67	34.580	0.18					92.1
763	5.64	34.57	0.46					80.2
840A	5.33	34.570	0.44					76.6
871	5.14	34.570	0.50					74.5
937A	4.87	34.575	0.56					71.1
968	4.71	34.574	0.80					69.5
1035A	4.46	34.576	0.84					66.7
1060B	4.39	34.584						65.4
1085	4.26	34.577	0.89					64.6
1182	3.95	34.598	1.01					59.9
1229A	3.73	34.594	1.12					58.1
1295	3.56	34.606	1.19					55.6
1527A	3.05	34.624	1.55					49.6
1573A			1.64					
1727A	2.71	34.633	1.81					46.1
2021A	2.14	34.656	2.15					39.7
2096B			2.26					
2195B	1.96	34.668						37.5
2257A	1.94	34.677	2.48					36.6
2553A	1.82		2.56					
2595B			2.59					
2758A	1.77	34.682	2.66					35.0
3064A	1.63	34.690	2.96					33.4
3099B			3.00					
3198B	1.57	34.689						33.1
3259A	1.55	34.689	3.07					32.9
3549A	1.53	34.689	3.25					32.8
3601B			3.27					
3700B	1.54	34.700 U						
3741A	1.52	34.689	3.26					32.7
3908B			3.35					
3949A		34.693	3.38					
3987A		34.689	3.37					
3998B	1.53	34.697						32.9
4016A		34.690	3.38					
4035A		34.691	3.37					
4044A		34.689	3.40					
4049A	1.53	34.689	3.35					32.7

Z	T	S	O2	SIGT	DT	DC
0	27.0	33.76		21.823	600.1	0.000
10	25.10	33.797		22.424	542.7	0.057
20	23.51	33.965	4.43	22.990	488.6	0.109
30	21.63	33.919	3.79	23.519	438.3	0.159
50	18.61	34.123	2.66	24.470	347.7	0.234
75	15.45	34.433	1.51	25.455	258.7	0.310
100	12.98	34.740	0.65	26.215	191.3	0.365
125	12.14	34.817	0.48	26.439	159.9	0.408
150	11.66	34.863	0.55	26.582	155.9	0.448
200	11.30	34.778	0.67	26.567	147.8	0.526
250	10.76	34.753	0.71	26.646	140.3	0.601
300	10.27	34.729	0.66	26.714	133.9	0.673
400	9.37	34.688	0.42	26.834	122.5	0.808
500	8.31	34.639	0.19	26.963	110.2	0.933
600	7.16	34.595	0.16	27.097	97.5	1.048
700	6.14	34.574	0.32	27.219	86.9	1.154
800	5.49	34.571	0.45	27.298	78.4	1.251
1000	4.58	34.574	0.82	27.407	68.2	1.407
1200	3.86	34.595	1.05	27.494	59.1	1.535
1500	3.10	34.624	1.50	27.597	50.1	1.751
1750	2.66	34.639	1.83	27.648	44.5	1.897
2000	2.18	34.655	2.12	27.702	40.1	2.030
2250	1.93	34.671	2.49	27.741	36.6	2.151
2500	1.84	34.678	2.58	27.748	35.8	2.265
2750	1.77	34.683	2.66	27.756	35.0	2.360
3000	1.66	34.689	2.68	27.770	33.7	2.492
3250	1.55	34.696	3.07	27.774	32.9	2.612
3500	1.53	34.696	3.22	27.780	32.8	2.716
3750	1.52	34.697	3.26	27.781	32.7	2.825
4000	1.53	34.697	3.38	27.780	32.7	2.934

RV ARGO — SCAN EXPEDITION LEG X

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
11 48.0N	108 20.0W	1/25/70	1945 2140 GMT	3749M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
26		33.553	4.81												
5101A		34.694	2.89												
3106A	1.66	34.692						33.5							
3627A		34.688	3.14												
3667A		34.690	3.16												
3695A		34.694	3.17												
3715A		34.692	3.16												
3723A		34.693	3.16												

RV ARGO — SCAN EXPEDITION LEG X

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
16 26.0N	100 26.5W	1/28/70	0555 GMT	5584M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
5173	2.07	34.691						36.5							
5271	2.10	34.681						37.5							
5369	2.11	34.676						38.0							
5379		34.676													
5456		34.673													
5468	2.13	34.670						38.0							
5517		34.674													
5556		34.674													
5576		34.68													
5580	2.14	34.693						36.9							

BIOS EXPEDITION

The purposes of this expedition were: (1) to sample phytoplankton for horizontal and vertical distribution studies; (2) to make fine-scale vertical and horizontal zooplankton collections with a Longhurst-Hardy Plankton Recorder, and (3) to collect squid for taxonomic, biogeographic and ecological studies.

The hydrographic work varied from Nansen bottle casts of 5 bottles lowered to 200 m to casts of 20 bottles to approximately 3900 m. The STD was lowered to 500 m except for one 1000 m lowering.

Following the hydrographic and STD data are tabulations of chlorophyll and phaeophytin for the cruise.

BIOS Expedition was funded by the University of California.

PUBLICATIONS UTILIZING BIOS EXPEDITION DATA

Haury, L. R., 1973. Sampling bias of a Longhurst-Hardy Plankton Recorder. *Limnol. & Oceanogr., 18*: 500-506.

Haury, L. R., 1973. Studies on the sampling and small-scale pattern of marine zooplankton. Ph.D. thesis, University of California, San Diego, 176 pp.

Haury, L. R., 1976. Small-scale pattern of a California Current zooplankton assemblage. *Mar. Biol., 37*: 137-157.

Haury, L. R., 1976. Comparison of zooplankton patterns in the California Current and North Pacific Central Gyre. *Mar. Biol., 37*: 159-167.

Wormuth, J. H., 1971. The biogeography, systematics and interspecific relationships of the Oegopsid squid Family Ommastrephidae in the Pacific Ocean. Ph.D. thesis, University of California, San Diego, 189 pp.

Wormuth, J. H., 1976. The biogeography and numerical taxonomy of the Oegopsid squid Family Ommastrephidae in the Pacific Ocean. *Bull. Scripps Instn. Oceanogr., 23*, 90 pp.

PERSONNEL

BIOS Expedition

Ship's Captain:

Davis, Laurence E.	RV Alexander Agassiz

Personnel Participating in the Collection of Data:

Haury, Loren R.	Graduate Student	] Cruise Leaders
Wormuth, John H.	Graduate Student	
Bradley, Douglas C.	Electronics Technician	
Mantyla, Arnold W.	Laboratory Technician	
Rowe, Raymond A.	Assistant Programmer	
Venrick, Elizabeth L. Dr.	Research Biologist	

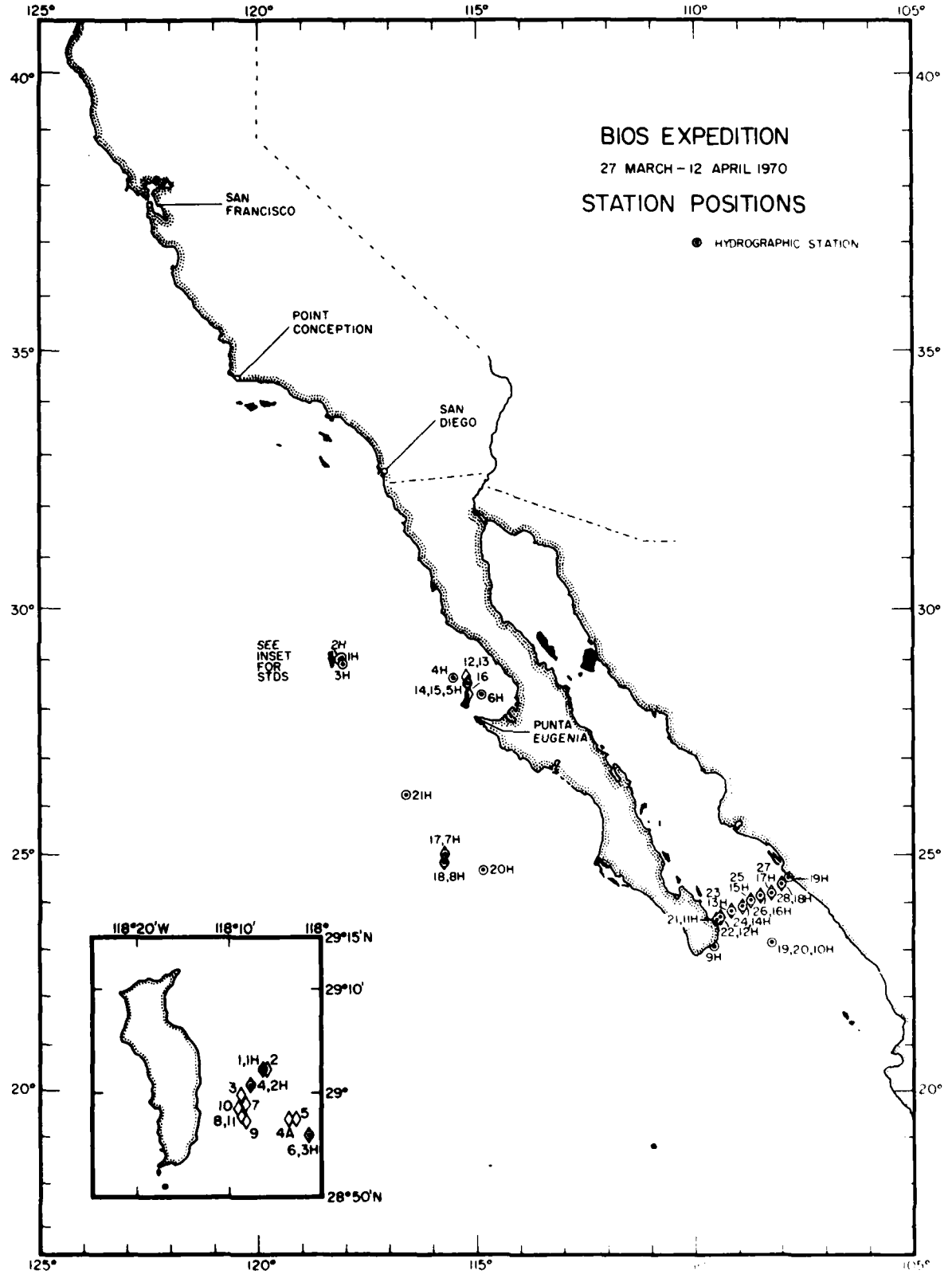
BIOS EXPEDITION
27 MARCH – 12 APRIL 1970
STATION POSITIONS
HYDROGRAPHIC STATION
SAN FRANCISCO
POINT CONCEPTION
SAN DIEGO
PUNTA EUGENIA
SEE INSET FOR STDS
125°
120°
115°
110°
105°
40°
35°
30°
25°
20°
118°20'W
118°10'
118°
29°15'N
29°10'
29°
28°50'N

FIGURE 2

RV ALEXANDER AGASSIZ — BIOS EXPEDITION — STC 1

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
29 02.2N	118 06.4W	3/27/70	2240 GMT	3112M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT

Z	T	S	O2	SIGT	DT	DD
0	16,69	33,36		24,351	358,6	0,000
10	16,67	33,38		24,360	350,1	0,035
20	16,29	33,38		24,456	348,6	0,070
30	16,24	33,39		24,477	346,5	0,105
50	16,19	33,38		24,481	346,2	0,175
75	16,05	33,37		24,505	343,9	0,261
100	13,03	33,39		25,162	281,3	0,340
125	12,34	33,44		25,335	264,9	0,409
150	10,95	33,60		25,716	228,6	0,472
200	9,36	33,94		26,252	177,7	0,575
250	7,91	33,99		26,516	152,6	0,660
300	7,42	34,07		26,650	140,0	0,735

RV ALEXANDER AGASSIZ — BIOS EXPEDITION — 1

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
29 02.5N	118 06.0W	3/27/70	2320 GMT	3112M	310	6KT	1	360 3 10

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT
1	16,67	33,362	4,720	0,14	2,	0,00	0,0	358,0
11	16,46	33,351	5,96	0,20	2,	0,00	0,0	354,2
31	16,34	33,350	6,15	0,27	2,	0,00	0,0	351,6
46	16,23	33,343	5,86	0,19	2,	0,00	0,0	349,8
62	16,17	33,338	5,78	0,17	2,	0,00	0,0	348,8
77	16,07	33,340	5,79	0,20	2,	0,07	0,0	346,5
92	15,02	33,378	5,78	0,22	2,	0,07	0,0	321,6
112	12,90	33,402	5,49	0,39	4,	0,12	3,3	278,0
137	11,44	33,453	5,03	0,69	8,	0,07	9,8	247,9
168	10,32	33,691	3,91	1,22	18,	0,05	21,	211,4
203	9,40	33,952	3,29	1,64	28,	0,05	27,	177,4
238	8,25	34,018	3,12	1,61	36,	0,22	30,	155,4
273	7,80	34,023	2,76	2,01	43,	0,00	32,	148,7
313	7,53	34,096	2,01	2,21	50,	0,00	34,	139,4

Z	T	S	O2	SIGT	DT	DD
0	16,67	33,362		24,357	358,0	0,000
10	16,48	33,354	5,96	24,394	354,5	0,036
20	16,38	33,352	6,06	24,414	352,6	0,071
30	16,34	33,352	6,14	24,423	351,7	0,106
50	16,21	33,343	5,84	24,446	349,6	0,177
75	16,08	33,342	5,79	24,474	346,8	0,264
100	14,17	33,387	5,69	24,926	303,8	0,346
125	12,03	33,425	5,28	25,380	260,6	0,417
150	10,91	33,544	4,56	25,679	232,2	0,480
200	9,48	33,935	3,32	26,228	180,0	0,585
250	8,05	34,021	3,02	26,520	152,3	0,670
300	7,59	34,067	2,29	26,622	142,6	0,746

RV ALEXANDER AGASSIZ — BIOS EXPEDITION — STC 2

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
29 02.2N	118 06.0W	3/27/70	2345 GMT	3112M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT

Z	T	S	O2	SIGT	DT	DD
0	16,58	33,35		24,369	356,9	0,000
10	16,39	33,37		24,428	351,3	0,035
20	16,34	33,37		24,439	350,2	0,071
30	16,24	33,37		24,462	348,0	0,106
50	16,16	33,36		24,473	347,0	0,175
75	15,86	33,36		24,540	340,5	0,262
100	12,88	33,52		25,138	283,7	0,340
125	11,81	33,45		25,443	254,6	0,408
150	10,58	33,66		25,828	218,0	0,466
200	9,23	34,00		26,320	171,3	0,567
250	7,93	34,01		26,529	151,4	0,650
300	7,47	34,08		26,650	139,9	0,725

RV ALEXANDER AGASSIZ — BIOS EXPEDITION — STC 3

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
29 59.8N	118 08.7W	3/28/70	0550 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT

Z	T	S	O2	SIGT	DT	DD
0	16,65	33,38		24,375	356,3	0,000
10	16,50	33,38		24,410	353,0	0,035
20	16,26	33,36		24,465	347,7	0,071
30	16,18	33,38		24,483	346,0	0,105
50	16,11	33,38		24,499	344,5	0,175
75	15,91	33,37		24,537	340,9	0,261
100	12,89	33,45		25,238	274,1	0,338
125	11,93	33,49		25,456	253,6	0,405
150	10,72	33,62		25,773	223,3	0,464
200	9,49	33,96		26,231	179,7	0,568
250	8,17	34,02		26,501	154,1	0,653
300	7,68	34,12		26,652	139,8	0,729

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 4

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
29 00.7N	118 07.7W	3/28/70	0901 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT

Z	T	S	SIGT	DT	DC
0	16,50	33,38	24,410	353,0	0,000
10	16,49	33,38	24,412	352,7	0,035
20	16,39	33,38	24,435	350,5	0,071
30	16,21	33,38	24,476	346,6	0,105
50	16,14	33,38	24,492	345,1	0,175
75	15,67	33,37	24,591	335,6	0,260
100	12,86	33,41	25,211	276,7	0,338
125	11,88	33,50	25,469	252,2	0,404
150	10,94	33,63	25,712	229,1	0,464
200	9,59	33,92	26,199	182,8	0,566
250	8,69	34,03	26,429	160,9	0,654
300	7,70	34,09	26,625	142,3	0,733

RV ALEXANDER AGASSIZ BIOS EXPEDITION 2

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
29 01.0N	118 07.5W	3/28/70	0932 GMT	2790M	320	9KT	1	330 3 6

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT
1	16,55	33,350	5,82	0,24	2.		0,0	356,2
11	16,54	33,353	6,25	0,19	1.		0,0	355,8
31	16,30	33,339	6,20	0,20	2.		0,0	351,6
46	16,18	33,338	5,89	0,17	2.		0,0	349,0
62	16,16		5,75	0,14	2.		0,0	
77	16,05		5,77	0,16	2.		0,0	
92	13,79	33,343	5,72	0,22	3.		1,0	296,7
112	12,69	33,398	5,51	0,32	5.		3,9	274,4
137	11,14	33,561	4,65	0,66	11.	12.	23,7	234,7
167	9,94	33,650	4,50	1,03	16.	19.	208,3	
201	9,65	33,880	3,54	1,51	25.	25.	186,7	
235	8,81	33,949	3,09	1,58	32.	29.	168,7	
270	8,21	34,027	3,13	1,85	37.	30.	154,0	
310	7,67	34,110	1,99	2,25	48.	34.	140,4	

Z	T	S	SIGT	DT	DC
1	16,55	33,350	24,376	356,2	0,000
10	16,54	33,345	24,380	355,8	0,036
20	16,44	33,349	24,398	354,1	0,071
30	16,31	33,342	24,420	351,8	0,107
50	16,18	33,344	24,455	348,7	0,177
75	16,06	33,358	24,478	346,4	0,264
100	13,23	33,382	25,116	285,8	0,344
125	11,86	33,479	25,454	253,6	0,412
150	10,52	33,602	25,792	221,4	0,472
200	9,65	33,874	26,152	187,2	0,576
250	8,52	34,009	26,437	160,1	0,665
300	7,79	34,087	26,609	143,8	0,743

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 4A

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 57.3N	118 03.5W	3/28/70	1745 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT

Z	T	S	SIGT	DT	DC
0	16,61	33,39	24,392	354,6	0,000
10	16,41	33,39	24,438	350,2	0,035
20	16,40	33,38	24,433	350,8	0,070
30	16,32	33,38	24,451	349,0	0,105
50	16,08	33,37	24,498	344,5	0,175
75	15,43	33,36	24,636	331,4	0,260
100	13,64	33,37	25,046	292,4	0,339
125	11,85	33,42	25,416	257,2	0,406
150	10,63	33,67	25,827	216,1	0,466
200	9,59	33,95	26,255	177,4	0,569
250	8,01	33,96	26,478	156,3	0,654
300	7,77	34,09	26,667	144,0	0,732

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 5

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 57.4N	118 02.7W	3/28/70	1915 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT

Z	T	S	SIGT	DT	DC
0	16,79	33,35	24,320	361,5	0,000
10	16,49	33,38	24,412	352,7	0,036
20	16,45	33,38	24,422	351,9	0,071
30	16,40	33,38	24,433	350,8	0,106
50	16,14	33,37	24,488	345,6	0,176
75	16,03	33,36	24,502	344,2	0,262
100	13,90	33,36	24,963	300,3	0,340
125	12,28	33,42	25,331	265,2	0,407
150	10,95	33,50	25,639	236,0	0,479
200	9,36	33,94	26,256	177,7	0,584
250	7,99	34,07	26,489	155,3	0,669
300	7,78	34,07	26,599	144,9	0,747

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 6

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 55.9N	118 01.3W	3/26/70	2205 GMT	4116M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	16,76	33,37		24,342	359,4	0,000
									10	16,59	33,39		24,397	354,2	0,036
									20	16,44	33,39		24,432	350,9	0,071
									30	16,44	33,39		24,432	350,9	0,106
									50	16,36	33,38		24,442	349,9	0,176
									75	16,03	33,37		24,510	343,5	0,264
									100	13,82	33,40		25,010	295,8	0,344
									125	11,71	33,46		25,470	252,1	0,413
									150	10,66	33,57		25,744	226,0	0,474
									200	9,49	33,95		26,239	179,0	0,577
									250	8,03	33,99		26,498	154,3	0,662
									300	7,69	34,07		26,611	143,6	0,739

RV ALEXANDER AGASSIZ BIOS EXPEDITION 3

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 56.0N	118 02.5W	3/26/70	2251 GMT	4116M	040	21KT	1	340 4 7

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
1	16,69	33,358	5,77	0,20	2.		0,0	358,7	0	16,69	33,358	5,77	24,349	358,7	0,000
11	16,65	33,358	5,72	0,22	2.		0,0	357,9	10	16,66	33,360	5,72	24,357	358,0	0,036
31	16,49	33,355	5,71	0,22	11,0		0,0	354,4	20	16,59	33,360	5,72	24,371	356,6	0,072
47	16,26	33,344		0,19	3.		0,0	350,3	30	16,50	33,357	5,71	24,391	354,8	0,107
62	16,11	33,341	5,75	0,20	9.		0,0	347,3	50	16,22	33,345	5,73	24,445	349,6	0,178
77	16,07	33,340	5,77	0,23	16,0		0,0	346,5	75	16,06	33,342	5,77	24,477	346,6	0,265
92	14,49	33,348	5,81	0,26	3.		0,0	312,9	100	13,97	33,374	5,77	24,959	300,7	0,347
112	13,27	33,413	5,71	0,30	4.		1,9	284,2	125	12,13	33,450	5,41	25,382	260,5	0,418
137	11,13	33,498	5,02	0,73	9.		11.	239,2	150	10,54	33,586	4,44	25,776	222,9	0,479
168	10,06	33,715	3,68	1,29	20.		21.	205,4	200	9,53	33,921	3,21	26,208	181,8	0,582
203	9,49	33,935	3,20	1,68	30.		26.	180,1	250	8,32	33,990	3,19	26,454	158,5	0,669
238	8,61	33,985	3,27	1,62	39.		27.	163,1	300	7,76	34,087	2,31	26,613	143,4	0,747
273	7,87	34,004	2,89	1,98	41.		30.	151,0							
314	7,71	34,120	1,95	2,31	49.		32.	140,2							

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 7

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 58.8N	118 08.3W	3/29/70	0948 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	16,59	33,38		24,389	354,9	0,000
									10	16,60	33,40		24,402	353,7	0,035
									20	16,60	33,40		24,402	353,7	0,071
									30	16,47	33,39		24,425	351,6	0,106
									50	16,11	33,37		24,492	345,2	0,176
									75	15,43	33,38		24,651	330,0	0,261
									100	13,75	33,44		25,055	291,5	0,339
									125	11,77	33,54		25,520	247,3	0,407
									150	10,64	33,62		25,787	221,9	0,467
									200	9,24	33,96		26,287	174,4	0,568
									250	8,11	34,02		26,510	153,2	0,651
									300	7,62	34,09		26,637	141,2	0,727

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 8

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 57.9N	118 08.8W	3/29/70	0709 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	16,73	33,37		24,349	358,8	0,000
									10	16,49	33,38		24,412	352,7	0,036
									20	16,26	33,38		24,465	347,7	0,071
									30	16,13	33,38		24,495	344,9	0,105
									50	15,69	33,38		24,594	335,5	0,174
									75	15,04	33,40		24,752	320,4	0,256
									100	13,73	33,46		25,075	289,6	0,333
									125	11,79	33,53		25,509	248,5	0,401
									150	10,58	33,63		25,805	226,2	0,460
									200	9,45	33,89		26,198	182,8	0,563
									250	8,37	34,03		26,478	156,2	0,650
									301	7,79	34,12		26,636	141,3	0,726

RV ALEXANDER AGASSIZ — BIOS EXPEDITION — STA 9

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 57.3N	118 08.2W	3/29/70	0957 GMT					

Z	T	S	O2	PO4	SiO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	16,60	33,38		24,387	355,2	0,000
									10	16,49	33,39		24,432	350,9	0,035
									20	16,29	33,37		24,451	349,1	0,070
									30	16,15	33,36		24,475	346,8	0,105
									50	16,09	33,37		24,496	344,8	0,175
									75	15,10	33,37		24,716	325,8	0,259
									100	13,70	33,44		25,066	290,5	0,336
									125	11,71	33,52		25,516	247,7	0,404
									150	10,59	33,61		25,788	221,6	0,463
									200	9,30	33,93		26,254	177,5	0,564
									250	8,15	33,99		26,480	156,0	0,650
									300	7,69	34,12		26,650	139,9	0,727

RV ALEXANDER AGASSIZ — BIOS EXPEDITION — STA 10

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 58.5N	118 09.0W	3/29/70	1753 GMT					

Z	T	S	O2	PO4	SiO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	16,38	33,33		24,399	354,0	0,000
									10	16,18	33,34		24,453	348,9	0,035
									20	16,17	33,34		24,455	348,7	0,070
									30	16,17	33,34		24,455	348,7	0,105
									50	16,08	33,36		24,491	345,3	0,175
									75	15,02	33,34		24,710	324,3	0,259
									100	13,47	33,32		25,020	294,9	0,337
									125	12,25	33,51		25,407	258,1	0,407
									150	11,13	33,57		25,661	233,9	0,469
									200	9,29	33,85		26,178	184,8	0,575
									250	8,34	33,97		26,436	160,2	0,664
									300	7,82	34,06		26,564	148,2	0,743

RV ALEXANDER AGASSIZ — BIOS EXPEDITION — STA 11

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 57.9N	118 08.6W	3/29/70	1907 GMT					

Z	T	S	O2	PO4	SiO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	16,27	33,31		24,409	353,0	0,000
									10	16,19	33,33		24,443	349,8	0,035
									20	16,18	33,34		24,453	348,9	0,070
									30	16,17	33,34		24,455	348,7	0,105
									50	16,13	33,35		24,472	347,1	0,175
									75	15,13	33,34		24,687	326,6	0,260
									100	14,04	33,34		24,919	304,5	0,339
									125	12,67	33,51		25,326	265,8	0,411
									150	10,99	33,59		25,702	230,0	0,474
									200	9,42	33,86		26,180	184,6	0,579
									250	8,35	33,97		26,435	160,4	0,668
									300	7,75	34,05		26,587	145,9	0,747

RV ALEXANDER AGASSIZ — BIOS EXPEDITION — STA 12

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 56.0N	118 13.1W	3/30/70	1510 GMT					

Z	T	S	O2	PO4	SiO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	15,59	33,58		24,769	318,7	0,000
									10	15,61	33,60		24,780	317,7	0,032
									20	14,48	33,57		25,003	296,5	0,063
									30	13,04	33,55		25,290	269,2	0,091
									50	11,64	33,60		25,591	240,5	0,147
									75	11,20	33,66		25,718	228,5	0,201
									100	10,85	33,69		25,807	191,5	0,254
									125	10,69	33,26		26,282	174,8	0,300
									150	10,56	33,29		26,321	171,1	0,344

RV ALEXANDER AGASSIZ — BIOS EXPEDITION — STA 6

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SEED	WEATHER	DOMINANT WAVES
28 30.0N	119 13.0W	3/30/70	1600 GMT	1407	350	12KT	1	320 5' 8

Z	T	S	O2	PO4	SiO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
0	15,61		6,11	0,22	6.	0,00	0,0								
6	15,61		6,09	0,20	6.	0,00	0,1								
10	15,59		6,07	0,16	6.	0,00	0,0								
20	15,21		5,95	0,24	7.	0,04	0,3								
25	14,37		5,59	0,36	7.	0,17	1,6								
36	12,96		4,95	0,64	9.	0,06	7,1								
46	12,12		4,48	0,84	10.	0,00	10.								
61	11,59		4,21	1,01	13.	0,00	15.								
76	11,29		4,00	1,11	44.	0,00	14.								
92	10,77		3,52	1,35	19.	0,00	18.								
101	10,60		2,86	1,62	23.	0,00	20.								
121	10,71		1,65	2,07	32.	0,00	24.								

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 13

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 38.0N	115 13.1W	3/30/70	1650 GMT	140M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	16.64	33.60		24.546	340.0	0.000
									10	16.63	33.62		24.564	338.3	0.034
									20	14.79	33.60		24.960	300.6	0.066
									30	13.44	33.59		25.234	274.5	0.095
									50	11.81	33.63		25.583	241.3	0.147
									75	11.07	33.95		25.967	204.6	0.203
									100	11.36	34.20		26.108	191.4	0.253
									125	11.33	34.27		26.167	185.7	0.300

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 14

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 32.7N	115 12.8W	3/30/70	2158 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	15.68	33.59		24.757	319.9	0.000
									10	15.36	33.60		24.836	312.4	0.032
									20	15.13	33.57		24.863	309.8	0.063
									30	14.78	33.56		24.931	303.3	0.094
									50	11.73	33.59		25.567	242.9	0.148
									75	11.32	33.88		25.867	214.3	0.206
									100	11.49	34.27		26.147	187.6	0.257
									125	11.07	34.34		26.269	176.1	0.303

RV ALEXANDER AGASSIZ BIOS EXPEDITION

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 32.5N	115 13.0W	3/30/70	2217 GMT	112M	340	12KT	1	320 4 6

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
1	16.74	33.522	5.81					347.9	0	16.74	33.522	5.81	24.463	347.9	0.000
11	16.36	33.515	5.96					340.0	10	16.38	33.517	5.95	24.540	340.5	0.034
26	16.34	33.511	5.63					339.9	20	16.35	33.514	5.90	24.546	339.9	0.069
36	16.32	33.510	5.81					339.5	30	16.33	33.512	5.82	24.549	339.7	0.103
46	16.21	33.511	5.46					337.1	50	15.88	33.502	5.22	24.644	330.7	0.170
62	14.42	33.479	4.43					301.9	75	12.56	33.525	3.77	25.357	262.8	0.244
77	12.30	33.538						256.9	100	11.18	33.815	2.92	25.841	216.7	0.305
102	11.08	33.816	2.88					214.9							

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 15

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 32.5N	115 13.0W	3/30/70	2356 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	16.81	33.53		24.453	348.9	0.000
									10	16.33	33.55		24.579	336.8	0.034
									20	16.30	33.55		24.566	336.2	0.068
									30	16.28	33.55		24.591	335.7	0.102
									50	15.69	33.50		24.686	326.7	0.168
									75	12.29	33.53		25.414	257.3	0.242
									100	11.06	33.84		25.883	212.8	0.301

RV ALEXANDER AGASSIZ BIOS EXPEDITION ST[illegible]

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 19.0N	115 12.6W	3/31/70	1859 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	17.88	33.91		24.488	345.[illegible]	0.000
									10	17.87	33.93		24.506	343.8	0.034
									20	17.87	33.94		24.513	343.1	0.069
									30	17.86	33.93		24.508	343.6	0.10[illegible]
									[illegible]	17.[illegible]	[illegible].93		24.50[illegible]	[illegible]	[illegible].172
									7[illegible]	17.[illegible]	[illegible].93		[illegible]	[illegible]	[illegible]
									100	14.67	[illegible].66		25.032	[illegible]	[illegible]
									125	11.95	[illegible].67		25.567	[illegible]	[illegible]
									150	11.[illegible]	[illegible].41		[illegible]	214.[illegible]	[illegible]
									200	11.[illegible]	[illegible].31		26.2[illegible]	177.1	[illegible]
									250	10.2[illegible]	[illegible]		26.487	15[illegible]	[illegible]
									300	9.[illegible]	[illegible]		26.621	[illegible]	[illegible]
									400	[illegible]	[illegible]		[illegible]	124.1	[illegible]
									500	7.[illegible]	[illegible].41		[illegible]	11[illegible]	[illegible]

RV ALEXANDER AGASSIZ BIOS EXPEDITION

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
28 19.0N	114 53.0W	3/31/70	1927 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT
[illegible]				[illegible].17	2.	0.05	0.1							
5[illegible]				[illegible].16	2.	0.02	0.1							
10[illegible]				0.27	3.	0.07	0.6							
15[illegible]				1.35	18.	0.05	16.							
20[illegible]				2.07	30.	0.00	25.							

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 17

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
25 02.1N	115 45.2W	3/31/70	2041	GMT					

Z	T	S	O2	PO4	SI03	NO2	NO3	DT
570	6.64							
575	6.58							
581	6.54	34.452	4.22	3.04	76.	0.00	34.	100.6
1056	4.03							
1063	4.02							
1069	3.96	34.525	4.61	3.25	116.	0.00	37.	65.7
1944	2.77							
1552	2.77							
1557	2.77	34.587	1.27	2.94	142.	0.00	36.	49.2
2037	2.07							
2042	2.08							
2047	2.07	34.643	2.12	2.80	149.	0.00	35.	40.2
2524	1.80							
2527	1.79							
2533	1.84							
2538	1.80	34.663	2.60	2.63	158.	0.00	32.	36.7
3018	1.62							
3030	1.64	34.673	2.87	2.34	162.	0.00	31.	34.9
3506	1.56							
3521	1.57	34.667	3.08	2.63	171.	0.00	34.	
3750A	1.57	34.669	3.09	2.46	173.	0.00	38.	34.6
3769A	1.58	34.663	3.01	2.50	171.	0.00	38.	35.1
3778A	1.58	34.664	3.08	2.21	169.	0.00	38.	35.0
3787A	1.60	34.661	3.10	2.53	171.	0.00	38.	35.4
3792A	1.58	34.667	3.04	2.57	165.	0.00	37.	34.7
3796A	1.58	34.664	3.14	2.61	169.	0.00	37.	35.0
3801A	1.57	34.668	3.02	2.61	165.	0.00	38.	34.7
3806A	1.58	34.667	3.06	2.60	165.	0.00	37.	34.8
3810A	1.58	34.675	3.11	2.47	163.	0.00	36.	34.2
3815A	1.58	34.673	3.11	2.66	163.	0.00	37.	34.9
3819A	1.59	34.670	2.96	2.33	165.	0.00	37.	34.6
3824A	1.60	34.662	2.96	2.51	171.	0.00	36.	35.1
3829A	1.58	34.666	3.11	2.66	176.	0.00	38.	34.9
3833A	1.57	34.666	3.09	2.40	180.	0.00	36.	34.7
3838A	1.58	34.671	3.03	2.51	180.	0.00	37.	34.8
3842A	1.58	34.672	3.10	2.74	169.	0.00	36.	34.4
3847A	1.58	34.673	3.01	2.76	167.	0.00	35.	34.3
3852A	1.59	34.673	3.12	2.67	167.	0.00	35.	34.4
3856A	1.59	34.672	3.04	2.16	167.	0.00	36.	34.5
3861A	1.57	34.669	3.15	2.57	167.	0.00	35.	34.5

Z	T	S	O2	PO4	SI03	NO2	NO3	DT
600	6.39	34.450	0.23	27.089	98.3	0.000		
700	5.67	34.445	0.29	27.177	89.9	0.103		
800	5.07	34.455	0.36	27.257	82.3	0.198		
1000	4.20	34.505	0.54	27.394	69.4	0.369		
1200	3.65	34.559	0.77	27.493	60.0	0.517		
1500	2.89	34.595	1.18	27.593	50.5	0.712		
1750	2.37	34.613	1.62	27.652	44.9	0.856		
2000	2.09	34.638	2.04	27.696	40.8	0.987		
2250	1.96	34.652	2.35	27.718	38.3	1.109		
2500	1.81	34.662	2.57	27.736	36.8	1.226		
2750	1.72	34.669	2.73	27.750	35.5	1.343		
3000	1.63	34.676	2.86	27.762	34.5	1.456		
3250	1.60	34.675	2.98	27.763	34.4	1.570		
3500	1.56	34.670	3.07	27.762	34.5	1.664		
3750	1.57	34.669	3.09	27.761	34.6	1.800		

RV ALEXANDER AGASSIZ BIOS EXPEDITION 7

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
25 02.0N	115 45.0W	3/31/70	2102	GMT					

Z	T	S	O2	PO4	SI03	NO2	NO3	DT
0				0.20	2.	0.05	0.1	
50				0.14	2.	0.02	0.1	
100				0.37	4.	0.07	1.6	
150				2.31	33.	0.00	25.	
200				2.34	34.	0.00	26.	

RV ALEXANDER AGASSIZ BIOS EXPEDITION 8

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
24 52.0N	115 46.0W	4/ 1/70	0720	1037 GMT	3918M	020	14KT	2	

Z	T	S	O2	PO4	SI03	NO2	NO3	DT
570	6.64							
575	6.58							
581	6.54	34.452	4.22	3.04	76.	0.00	34.	100.6
1056	4.03							
1063	4.02							
1069	3.96	34.525	4.61	3.25	116.	0.00	37.	65.7
1944	2.77							
1552	2.77							
1557	2.77	34.587	1.27	2.94	142.	0.00	36.	49.2
2037	2.07							
2042	2.08							
2047	2.07	34.643	2.12	2.80	149.	0.00	35.	40.2
2524	1.80							
2527	1.79							
2533	1.84							
2538	1.80	34.663	2.60	2.63	158.	0.00	32.	36.7
3018	1.62							
3030	1.64	34.673	2.87	2.34	162.	0.00	31.	34.9
3506	1.56							
3521	1.57	34.667	3.08	2.63	171.	0.00	34.	
3750A	1.57	34.669	3.09	2.46	173.	0.00	38.	34.6
3769A	1.58	34.663	3.01	2.50	171.	0.00	38.	35.1
3778A	1.58	34.664	3.08	2.21	169.	0.00	38.	35.0
3787A	1.60	34.661	3.10	2.53	171.	0.00	38.	35.4
3792A	1.58	34.667	3.04	2.57	165.	0.00	37.	34.7
3796A	1.58	34.664	3.14	2.61	169.	0.00	37.	35.0
3801A	1.57	34.668	3.02	2.61	165.	0.00	38.	34.7
3806A	1.58	34.667	3.06	2.60	165.	0.00	37.	34.8
3810A	1.58	34.675	3.11	2.47	163.	0.00	36.	34.2
3815A	1.58	34.673	3.11	2.66	163.	0.00	37.	34.9
3819A	1.59	34.670	2.96	2.33	165.	0.00	37.	34.6
3824A	1.60	34.662	2.96	2.51	171.	0.00	36.	35.1
3829A	1.58	34.666	3.11	2.66	176.	0.00	38.	34.9
3833A	1.57	34.666	3.09	2.40	180.	0.00	36.	34.7
3838A	1.58	34.671	3.03	2.51	180.	0.00	37.	34.8
3842A	1.58	34.672	3.10	2.74	169.	0.00	36.	34.4
3847A	1.58	34.673	3.01	2.76	167.	0.00	35.	34.3
3852A	1.59	34.673	3.12	2.67	167.	0.00	35.	34.4
3856A	1.59	34.672	3.04	2.16	167.	0.00	36.	34.5
3861A	1.57	34.669	3.15	2.57	167.	0.00	35.	34.5

Z	T	S	O2	SIGT	DT	DD
0	17.30	33.71		24.475	346.8	0.000
10	17.22	33.74		24.517	342.8	0.034
20	17.29	33.77		24.523	342.2	0.069
30	17.25	33.76		24.525	342.0	0.103
50	16.74	33.68		24.591	335.7	0.171
75	15.97	33.71		24.764	317.3	0.253
100	12.59	33.67		25.465	252.5	0.325
125	11.83	33.77		25.687	231.4	0.396
150	11.14	34.10		26.070	195.0	0.460
200	10.73	34.41		26.385	168.1	0.582
250	9.52	34.35		26.546	149.8	0.693
300	8.74	34.36		26.679	137.2	0.806
400	7.70	34.40		26.868	119.2	0.822
500	6.84	34.42		27.010	105.8	0.942

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 18

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
24 51.8N	115 46.1W	4/ 1/70	0453	GMT	4918M				

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	18.86	34.11		24.398	354.1	0.000
									10	18.86	34.13		24.413	352.7	0.014
									20	18.86	34.14		24.420	351.9	0.021
									30	18.86	34.15		24.428	351.2	0.028
									50	17.81	34.02		24.569	338.9	0.172
									75	15.11	33.74		24.998	298.9	0.644
									100	13.42	33.67		25.454	258.5	0.924
									125	11.46	34.00		25.934	207.9	1.362
									150	11.56	34.29		26.141	186.3	1.455
									200	11.46	34.51		26.322	171.0	1.524
									250	11.54	34.62		26.406	163.6	1.611
									300	9.93	34.56		26.646	140.8	1.690
									400	8.27	34.45		26.962	123.6	1.829
									500	7.34	34.46		26.967	109.6	1.953
									600	6.34	34.45		27.096	97.1	2.065
									700	5.51	34.44		27.193	88.4	2.167
									800	4.99	34.46		27.271	81.1	2.261
									1000	4.15	34.51		27.403	68.5	2.429

RV ALEXANDER AGASSIZ BIOS EXPEDITION 9

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
23 05.0N	109 33.0W	4/ 9/70	0341	GMT	1364M	120	KT		

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
0	21.06	34.444	5.31					384.8	0	21.06	34.444	5.31	24.075	384.8	0.000
10	20.45	34.408	5.37					371.6	10	20.45	34.408	5.37	24.212	371.8	0.038
30	19.98	34.380	5.53					362.2	20	20.13	34.390	5.47	24.283	365.0	0.075
41	19.90	34.375	5.48					360.3	30	19.98	34.380	5.53	24.315	362.0	0.111
51	19.70	34.364	5.45					356.9	50	19.73	34.358	5.45	24.363	357.4	0.183
66	19.79	34.267	4.92					341.0	75	16.15	34.149	3.51	25.078	289.4	0.265
80	14.16	34.148	2.36					247.7	100	14.25	34.524	1.30	25.787	221.9	0.529
101	14.25	34.526	1.28					221.7	125	13.37	34.767	0.66	26.156	186.7	0.781
127	13.28	34.776	0.63					184.3	150	12.70	34.767	0.37	26.291	174.0	0.927
147	12.75	34.767	0.39					174.9	200	11.83	34.735	0.26	26.434	160.4	0.513
177	12.36	34.758	0.27					167.2	250	10.96	34.682	0.18	26.555	149.0	0.593
201	11.66	34.724	0.26					158.1	300	10.35	34.658	0.27	26.643	140.5	0.668
237	11.13	34.687	0.16					151.5	400	8.71	34.562	0.27	26.841	121.6	0.807
274	10.63	34.673	0.26					144.0	500	7.26	34.523	0.28	27.028	104.0	0.928
336	9.85	34.625	0.29					134.7							
411	8.51	34.552	0.26					119.5							
483	7.46	34.527	0.27					106.5							
562	6.67	34.509	0.33					97.4							

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 19

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
23 10.0N	108 15.3W	4/ 9/70	1849	GMT	2762M				

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	21.44	34.71		24.173	375.4	0.000
									10	21.31	34.75		24.239	369.1	0.037
									20	20.18	34.65		24.619	332.9	0.672
									30	19.20	34.68		24.897	306.4	0.104
									50	17.07	34.76		25.332	265.1	0.162
									75	14.99	34.72		25.777	222.8	0.223
									100	13.89	34.80		26.074	194.5	0.276
									125	12.80	34.74		26.250	177.8	0.323
									150	12.20	34.71		26.345	168.9	0.368
									200	11.03	34.64		26.509	153.2	0.450
									250	10.23	34.60		26.620	142.7	0.527
									300	9.40	34.57		26.737	131.7	0.598
									400	7.90	34.50		26.917	114.6	0.728
									500	6.61	34.48		27.057	101.3	0.843

RV ALEXANDER AGASSIZ BIOS EXPEDITION 10

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
23 16.0N	108 15.5W	4/ 9/70	2015	GMT	2752M	360	17KT	0	350 3 6

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
0	21.67	34.795	5.23	0.11	2.	0.00	0.2	379.2	0	21.67	34.795	5.23	24.134	379.2	0.000
10	21.47	34.786	5.37	0.09	2.	0.00	0.3	376.5	10	21.47	34.786	5.37	24.162	376.5	0.038
31	19.52	34.957	4.75	0.55	6.	0.38	3.0	308.7	20	20.77	34.748	5.07	24.458	348.3	0.074
40	18.30	34.874	4.99	1.35	16.	0.15	13.	285.2	30	19.65	34.648	4.78	24.832	312.7	0.107
51	16.75	34.787	4.39	1.36	20.	0.48	14.	255.9	50	16.88	34.793	2.41	25.402	258.4	0.165
66	15.48	34.772	1.42	2.01	36.	0.36	21.	229.1	75	14.64	34.802	1.18	25.863	214.6	0.224
81	14.56	34.824	1.09	2.31	34.	0.13	25.	208.1	100	13.69	34.822	0.81	26.042	198.8	0.276
101	13.86	34.821	0.80	2.34	36.	0.23	27.	192.4	125	13.04	34.794	0.51	26.244	178.4	0.323
121	13.01	34.793	0.50	2.38	37.	0.51	25.	177.9	150	12.30	34.761	0.27	26.364	167.8	0.367
146	12.46	34.746	0.28	2.44	40.	0.00	27.	168.4	200	11.27	34.704	0.14	26.515	154.7	0.444
176	11.76	34.733	0.23	2.50	41.	0.45	27.	159.3	250	10.42	34.649	0.25	26.624	145.1	0.504
206	11.19	34.699	0.13	2.48	41.	0.27	26.	151.7	300	9.59	34.594	0.24	26.731	135.2	0.557
253	10.67	34.667	0.24	2.79	42.	0.00	29.	145.1	400	7.87	34.534	0.16	26.914	119.4	0.727
272	10.09	34.629	0.26	2.76	46.	0.00	29.	138.7	500	6.50	34.514	0.25	27.060	101.9	0.842
327	9.03	34.571	0.22	2.77	54.	0.00	25.	125.5							
405	8.01	34.532	0.16	3.10	65.	0.00	35.	113.7							
472	7.20	34.511	0.24	3.17	70.	0.00	34.	104.1							
553	6.49	34.494	0.22	3.24	76.	0.00	42.	96.1							

RV ALEXANDER AGASSIZ BIOS EXPEDITION STD 20

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
23 10.0N	108 15.5W	4/ 5/70	0540 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	21,42	34,66		24,141	378,5	0,000
									10	21,42	34,68		24,156	377,1	0,038
									20	21,18	34,77		24,290	364,5	0,075
									30	19,85	34,87		24,727	322,7	0,109
									50	17,61	34,68		25,294	268,7	0,169
									75	15,61	34,86		25,747	225,6	0,231
									100	14,17	34,80		26,015	200,1	0,285
									125	12,98	34,76		26,230	179,8	0,333
									150	12,27	34,72		26,359	169,4	0,378
									200	11,21	34,66		26,452	154,9	0,461
									250	10,32	34,61		26,612	143,5	0,538
									300	9,55	34,56		26,706	134,4	0,610
									400	8,09	34,50		26,889	117,5	0,743
									500	6,62	34,47		27,048	102,2	0,860

RV ALEXANDER AGASSIZ BIOS EXPEDITION STD 21

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
23 38.5N	109 30.5W	4/ 5/70	1808 GMT	93M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	20,50	34,39		24,185	374,4	0,000
									10	20,50	34,43		24,215	371,5	0,037
									20	20,45	34,43		24,229	370,2	0,074
									30	19,87	34,38		24,344	359,2	0,111
									50	14,81	34,17		25,394	259,3	0,173
									75	14,51	34,54		25,743	226,1	0,234

RV ALEXANDER AGASSIZ BIOS EXPEDITION 11

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
23 38.5N	109 30.5W	4/ 5/70	1823 GMT	93M	350	17KT	1	330 6 8

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
1	20.50	34,449	5.31	0.29	3.	0.00	0.0	370.1	0	20,50	34,449	5,31	24,230	370,1	0,000
11	20.48	34,441	5.37	0.10	3.	0.00	0.2	370.1	10	20,46	34,443	5,37	24,229	370,1	0,037
21	20.26	34,427	5.34	0.19	3.	0.00	0.2	366.1	20	20,31	34,430	5,34	24,266	366,6	0,074
31	19.94	34,384	5.39	0.14	3.	0.00	0.0	360.7	30	19,97	34,389	5,39	24,325	361,2	0,110
41	15.44	34,273	2.95	0.50	15.	0.67	7.9	264.9	50	14,92	34,232	2,62	25,415	257,2	0,172
52	14.81	34,222	2.55	0.93	16.	0.15	9.7	255.5	75	14,54	34,596	1,37	25,779	222,6	0,233
67	14.65	34,475	1.79	1.42	23.	0.11	16.	233.7							
82	14.42	34,690	1.00	2.25	29.	0.22	24.	213.2							

RV ALEXANDER AGASSIZ BIOS EXPEDITION STD 22

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
23 40.5N	109 27.5W	4/ 5/70	1935 GMT	567M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	20,45	34,45		24,244	368,7	0,000
									10	20,43	34,46		24,257	367,5	0,037
									20	20,38	34,45		24,262	367,0	0,074
									30	19,22	34,30		24,451	349,0	0,109
									50	15,41	34,04		25,162	281,3	0,173
									75	14,66	34,48		25,664	233,5	0,238
									100	14,68	34,60		25,752	225,1	0,296
									125	13,82	34,75		26,035	198,3	0,349
									150	13,03	34,74		26,204	182,2	0,398
									200	12,19	34,73		26,362	167,2	0,487
									250	11,39	34,67		26,467	157,3	0,571
									300	10,49	34,62		26,590	145,6	0,650
									400	8,89	34,52		26,780	127,5	0,744
									500	7,73	34,50		26,942	112,2	0,922

RV ALEXANDER AGASSIZ BIOS EXPEDITION 12

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
23 40.5N	109 27.5W	4/ 5/70	2016 GMT	567M	010	20KT	1	360 6 7

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
1	20.45	34,457	5.27	0.32	2.	0.00	0.0	369.7	0	20,45	34,457	5,27	24,234	369,7	0,000
16	20.45	34,442	5.33	0.2[illegible]	2.	0.00	0.2	369.3	10	20,45	34,441	5,31	24,235	369,[illegible]	0,037
31	20.35	34,422	5.09	0.23	2.	0.00	0.2	368.2	20	20,42	34,437	5,30	24,241	369,0	0,074
46	14.07	34,2[illegible]	4.73	0.5.	4.	0.10	2.0	32[illegible].2	30	20,36	34,424	5,12	24,248	368,3	0,111
51	15.69	34,061	3.61	1.0[illegible]	10.	0.05	9.[illegible]	28[illegible]	50	15,87	34,[illegible]	5,03	25,080	289,1	0,177
66	14.96	34,157	[illegible].61	1.96	15.	0.05	16.	25[illegible]	75	14,65	34,[illegible]	1,77	25,625	23[illegible]	[illegible]
81	14.84	34,61[illegible]	1.[illegible]6	2.2[illegible]	24.	0.02	24.	227.[illegible]	100	13,93	34,[illegible]7	0,94	25,916	204,[illegible]	0,[illegible]
101	13.84	34,5[illegible]	0.92	[illegible]	[illegible]	0.00	[illegible]	20[illegible].1							

RV ALEXANDER AGASSIZ BIOS EXPEDITION STD 23

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
23 49.0N	109 12.5W	4/ 5/70	2225 GMT	1503M				

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	21,26	34,66		24,185	374,4	0,000
									10	21,22	34,69		24,218	371,1	0,037
									20	21,20	34,69		24,224	370,6	0,074
									30	20,64	34,74		24,413	352,4	0,111
									50	19,35	34,92		24,889	307,2	0,177
									75	17,07	34,84		25,594	259,2	0,248
									100	14,80	34,74		25,854	217,4	0,309
									125	13,59	34,72		26,075	194,5	0,361
									150	12,75	34,70		26,235	179,4	0,408
									200	12,21	34,71		26,343	169,1	0,496
									250	11,80	34,70		26,413	162,4	0,583
									300	11,30	34,68		26,491	155,0	0,666
									400	9,79	34,58		26,680	137,1	0,820
									500	7,92	34,51		26,922	114,1	0,954
									600	6,59	34,48		27,067	98,5	1,067
									700	5,78	34,48		27,191	88,6	1,172
									800	5,23	34,48		27,258	82,2	1,266
									1000	4,50	34,50		27,379	70,8	1,439

RV ALEXANDER AGASSIZ BIOS EXPEDITION 13

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
23 49.0N	109 12.5W	4/ 5/70	2305 GMT	1503M	340	19KT	1	360 6 7

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
1	21,24	34,698	5,17	0,39	1.	0,00	0,1	371,1	0	21,24	34,698	5,17	24,219	371,1	0,000
10	21,24	34,696	5,27	0,64	1.	0,00	0,3	371,2	10	21,24	34,697	5,24	24,218	371,2	0,037
51	20,54	34,803	5,28	0,78	2.	0,00	0,3	345,8	20	21,14	34,716	5,27	24,260	367,1	0,074
76	19,63	34,906	4,67	1,12	5.	1,62	1,8	315,1	30	20,61	34,795	5,28	24,461	348,1	0,110
91	19,29	34,969	4,38	1,35	7.	1,18	6,4	302,2	50	19,30	34,964	4,39	24,936	302,8	0,175
96	19,10	35,105	4,29	1,54	8.	0,79	7,1	287,7	75	17,77	34,964	3,34	25,319	266,3	0,247
81	16,74	34,859	2,59	2,24	19.	0,20	17.	250,4	100	14,70	34,790	1,08	25,894	211,6	0,307
101	14,02	34,792	1,02	2,86	31.	0,00	26.	209,9							

RV ALEXANDER AGASSIZ BIOS EXPEDITION STD 24

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
23 55.0N	108 59.0W	4/ 6/70	0116 GMT	2098M				

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	21,19	34,66		24,204	372,5	0,000
									10	21,20	34,67		24,209	372,1	0,037
									20	21,19	34,67		24,211	371,8	0,074
									30	20,86	34,69		24,316	361,8	0,111
									50	19,70	34,95		24,822	313,7	0,179
									75	17,79	34,86		25,235	274,5	0,253
									100	15,82	34,85		25,692	230,9	0,317
									125	13,99	34,72		25,992	202,4	0,372
									150	13,19	34,72		26,157	186,7	0,422
									200	12,38	34,72		26,317	171,4	0,513
									250	11,69	34,68		26,419	161,9	0,599
									300	10,65	34,61		26,558	148,6	0,680
									400	9,33	34,55		26,733	132,0	0,828
									500	7,84	34,49		26,916	114,5	0,960

RV ALEXANDER AGASSIZ BIOS EXPEDITION 14

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
23 55.0N	108 59.0W	4/ 6/70	0148 GMT	2098M	320	18KT	2	310 5 6

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
1	21,19		5,19	0,32	2.	0,00	0,0								
10	21,19		5,23	0,30	1.	0,00	0,3								
51	20,77		5,28	0,43	2.	0,00	0,4								
92	20,11		5,02	0,69	4.	2,70	0,0								
91	19,62		4,55	0,96		3,93									
86	19,15		3,610	1,28	11.	1,23	11.								
91	17,77		3,960	1,44	12.	0,49	12.								
101	15,76		1,84	2,00	27.	0,39	26.								

RV ALEXANDER AGASSIZ BIOS EXPEDITION STD 25

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
24 02.5N	108 45.0W	4/ 6/70	0417 GMT	1959M				

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	20,77	34,64		24,302	363,1	0,000
									10	20,77	34,65		24,310	362,4	0,036
									20	20,75	34,65		24,315	361,9	0,073
									30	20,61	34,62		24,330	360,5	0,109
									50	19,67	34,05		25,047	287,4	0,174
									75	16,00	34,72		25,551	244,9	0,241
									100	14,56	34,69		25,847	216,1	0,299
									125	13,48	34,69		26,074	194,4	0,351
									150	12,86	34,70		26,208	181,4	0,399
									200	11,99	34,70		26,377	165,2	0,488
									250	11,10	34,69		26,497	154,4	0,571
									300	10,42	34,67		26,587	145,9	0,649
									400	9,13	34,56		26,748	129,7	0,796
									500	7,66	34,49		26,905	114,0	0,933

RV ALEXANDER AGASSIZ BIOS EXPEDITION 15

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
24 02.5N	108 45.0W	4/ 6/70	0437 GMT	1959M	330	10KT		

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT
1	20.77		5.27	0.30	2.	0.00	0.0	
17	20.76		5.23	0.27	2.	0.00	0.0	
31	20.65		5.05	0.30	2.	0.00	0.0	
41	19.75		5.23	0.30	3.	0.00	0.0	
53	16.67		4.40	0.63	6.	0.79	2.7	
67	15.45		2.60	1.61	15.	0.49	15.	
82	16.05		2.12	2.05	19.	0.15	20.	
102	14.56		0.99	2.38	31.	0.00	25.	

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 26

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
24 09.0N	108 31.5W	4/ 6/70	0653 GMT	1419M				

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT
0	20.12	35.12						24.840 311.9 0.000
10	20.12	35.14						24.856 310.4 0.031
20	19.37	35.10						25.021 294.6 0.061
30	17.42	35.00						25.432 255.6 0.089
50	15.57	34.93						25.810 219.7 0.137
75	14.15	34.86						26.066 195.3 0.189
100	13.56	34.77						26.120 190.2 0.238
125	12.62	34.73						26.278 175.2 0.284
150	12.15	34.70						26.347 168.7 0.328
200	11.54	34.67						26.439 159.9 0.415
250	10.68	34.62						26.557 148.7 0.492
300	9.64	34.55						26.682 136.9 0.567
400	8.47	34.50						26.831 122.8 0.703
500	7.41	34.49						26.981 108.5 0.827

RV ALEXANDER AGASSIZ BIOS EXPEDITION 16

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
24 09.0N	108 31.5W	4/ 6/70	0719 GMT	1419M	320	14KT		

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT
1	20.06		6.33	0.49	0.	0.00	0.0	
16	20.00		6.25	0.36	0.	0.00	0.0	
31	17.96		4.04	1.36	14.	1.26	7.3	
41	16.51		2.93	1.87	25.	0.10	16.	
52	15.91		2.44	1.87	30.	0.10	16.	
67	15.02		1.63	1.95	36.	0.17	17.	
82	14.26		1.15	2.44	43.	0.05	25.	
102	13.72		0.83	2.31	43.	0.00	29.	

RV ALEXANDER AGASSIZ BIOS EXPEDITION 17

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
24 10.9N	108 17.5W	4/ 6/70	0952 GMT	1066M	300	15KT		

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT
1	20.02	35.178	6.14	0.43	0.	0.00	0.0	305.1
16	20.02	35.174	6.19	0.49	0.	0.00	0.0	305.4
31	19.48	35.197	5.03	0.60	4.	0.00	0.0	290.3
51	18.12	35.156	4.03	1.29	13.	0.59	5.7	280.5
67	17.03	35.104	2.90	1.92	22.	0.71	14.	239.1
82	15.33	34.884	1.61	2.34	31.	0.10	29.	217.9
102	14.36	34.834	0.96	2.37	35.	0.12	29.	201.5
122	13.90	34.902	0.90	2.66	42.	0.05	29.	187.3

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT
0	20.02	35.178	6.14	24.911	305.1	0.000		
10	20.02	35.175	6.17	24.909	305.3	0.031		
20	19.87	35.180	5.96	24.955	301.1	0.061		
30	19.48	35.197	5.03	25.067	290.3	0.091		
50	16.32	35.015	2.33	25.703	229.8	0.143		
75	14.14	34.841	0.94	26.053	196.5	0.197		

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 27

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
24 11.0N	108 17.5W	4/ 6/70	1009 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT
0	20.02	35.44						25.110 286.2 0.000
10	20.01	35.44						25.113 285.9 0.029
20	20.00	35.42						25.100 287.1 0.057
30	19.96	35.42						25.111 286.1 0.086
50	17.32	35.36						25.731 227.1 0.138
75	14.32	34.89						26.022 199.5 0.193
100	13.84	34.93						26.185 184.0 0.240
125	12.88	34.84						26.312 172.0 0.285
150	12.36	34.78						26.368 166.7 0.329
200	11.47	34.71						26.483 155.7 0.411
250	10.50	34.62						26.574 147.1 0.490
300	9.95	34.55						26.629 141.9 0.565
400	8.45	34.45						26.795 126.2 0.706
500	7.14							

RV ALEXANDER AGASSIZ BIOS EXPEDITION STA 18

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
24 23.0N	108 03.0W	4/ 6/70	1228 GMT					

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
									0	19.66	35.69		25.365	261.9	0.000
									10	17.92	35.63		25.792	221.3	0.024
									20	15.98	35.50		26.154	186.9	0.045
									30	15.18	35.37		26.235	179.3	0.063
									50	13.98	35.33		26.464	157.5	0.097

RV ALEXANDER AGASSIZ BIOS EXPEDITION 18

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
24 23.0N	108 03.0W	4/ 6/70	1247 GMT	58M	350	10KT	2	290 2 5

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
1	19.65	35.197	5.54	0.66	1.	0.00	0.0	294.5							
6	19.66		5.65	0.52	0.	0.00	0.0								
11	19.63		5.51	0.66	1.	0.00	0.0								
16	18.73	35.164	4.51	0.72	10.	0.20	0.5	274.4							
21	17.94		3.27	1.19	18.	0.89	5.8								
31	16.08		1.59	1.94	31.	0.00	14.								
41	15.18		1.06	1.94	33.	0.00	19.								
51	14.41	34.842	0.78	2.49	35.	0.00	27.	201.9							

RV ALEXANDER AGASSIZ BIOS EXPEDITION 19

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
24 30.5N	107 53.0W	4/ 6/70	1452 GMT	16M	280	5KT	2	280 2 5

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
1	18.37	35.091	5.43	0.84	10.	0.05	1.6	271.1							
4	18.38	35.076	5.39	1.01	10.	0.00	1.7	272.5							
7	18.43	35.078	5.44	1.03	10.	0.00	2.2	273.5							
10	16.79	34.983	2.90	1.81	24.	0.12	14.	242.5							
13	15.76	34.904	1.32	2.47	31.	0.29	24.	225.6							
16	15.76	34.904	1.37	2.49	31.	0.34	23.	225.6							

RV ALEXANDER AGASSIZ BIOS EXPEDITION 20

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
24 42.0N	114 51.0W	4/10/70	1148 GMT	3922M	360	12KT	2	300 4 8

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
3769	1.60	34.678	2.88	2.19	166.	0.00	37.	34.1							
3793	1.62	34.678	2.94	2.58	171.	0.00	38.	34.2							
3817	1.61	34.677	2.99	2.56	166.	0.00	38.	34.2							
3827	1.61		3.01	2.59	170.	0.00	38.								
3837	1.62	34.677	3.03	2.65	164.	0.00	38.	34.3							
3846	1.61	34.677	3.04	2.45	173.	0.00	39.	34.2							
3857	1.61	34.677	3.00	2.58	173.	0.00	39.	34.2							
3861	1.60		2.93	2.59	168.	0.00	38.								
3866	1.61	34.676	2.99	2.48	169.	0.00	39.	34.3							
3870	1.61		2.95	2.52	169.	0.00	38.								
3876	1.63	34.675	2.81	2.59	172.	0.00	39.	34.5							
3881	1.61		2.99	2.52	170.	0.00	39.								
3886	1.61	34.676	2.99	2.59	168.	0.00	38.	34.3							
3890	1.60		2.93	2.59	170.	0.00	38.								
3895	1.62	34.678	2.96	2.120	173.	0.00	38.	34.2							
3899	1.62		2.97	2.53	171.	0.00	37.								
3902	1.66 U	34.678	2.92	2.63	169.	0.00	38.								
3907	1.62		2.95	2.66	165.	0.00	38.								
3910	1.63	34.676	2.97	2.55	169.	0.00	39.	34.5							
3915	1.61	34.683	2.97	2.56	169.	0.00	39.	33.8							

RV ALEXANDER AGASSIZ BIOS EXPEDITION 21

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
26 16.0N	116 39.0W	4/12/70	0303 GMT	3882M	010	11KT	2	

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
3732	1.60	34.677	2.90	2.00	180.	0.00	36.	34.2							
3750	1.61	34.677	2.91	2.17	180.	0.00	36.	34.2							
3781	1.60	34.676	2.98	2.35	180.	0.00	38.	34.2							
3788	1.62	34.676	2.96	2.40	180.	0.00	38.	34.4							
3802	1.60	34.675	2.97	2.46	180.	0.00	38.	34.3							
3817	1.61	34.676	3.03	2.40	180.	0.00	38.	34.3							
3821	1.61	34.676	3.01	2.36	183.	0.00	37.	34.3							
3826	1.60	34.675	2.95	2.52	183.	0.00	36.	34.3							
3830	1.61	34.674	2.98	2.52	183.	0.00	36.	34.5							
3836	1.60	34.676	2.94	2.55	183.	0.00	38.	34.2							
3841	1.62	34.674	2.96	2.48	186.	0.00	39.	34.5							
3846	1.62	34.674	2.96	2.54	187.	0.00	38.	34.5							
3851	1.61	34.669	2.92	2.53	183.	0.00	39.	34.9							
3856	1.60	34.671	2.94	2.42	183.	0.00	39.	34.6							
3861	1.61	34.674	2.95	2.48	183.	0.00	39.	34.3							
3865	1.62	34.673	2.98	2.53	183.	0.00	38.	34.4							
3869	1.61	34.669	2.97	2.61	183.	0.00	40.	34.9							
3873	1.61	34.671	2.98	2.23	183.	0.00	40.	34.7							
3877	1.61	34.670	2.99	2.30	183.	0.00	40.	34.6							
3881	1.61	34.667	2.96	2.53	183.	0.00	40.	33.8							

Date 1970	Local Time	Depth meters	Chlorophyll-a mg/m^3	Phaeophytin mg/m^3
March 27	1520	1	0.06	0.01
	(+8)	11	0.08	0.03
		31	0.06	0.02
Station 1		46	0.09	0.03
29° 02.5'N		62	0.10	0.04
118° 06.0'W		77	0.15	0.07
		92	0.14	0.10
		112	0.14	0.20
		137	0.11	0.08
		168	0.03	0.03
		203	0.00	0.02
		238	0.00	0.02
March 28	0132	1	0.07	0.02
	(+8)	11	0.07	0.02
		31	0.06	0.02
Station 2		46	0.09	0.03
29° 01.0'N		62	0.10	0.04
118° 07.5'W		77	0.10	0.04
		92	0.19	0.18
		112	0.15	0.18
		137	0.04	0.06
		167	0.01	0.02
		201	0.00	0.01
		235	0.00	0.02
March 28	1451	1	0.04	0.01
	(+8)	11	0.07	0.00
		31	0.07	0.00
Station 3		47	0.09	0.00
28° 56.0'N		62	0.12	0.03
118° 02.5'W		77	0.13	0.04
		92	0.31	0.20
		112	0.18	0.12
		137	0.11	0.10
		168	0.01	0.04
		203	0.00	0.02
		238	0.00	0.01
March 30	0800	0	3.72	0.32
	(+8)	6	3.12	0.23
		10	3.67	0.28
Station 4		20	2.80	0.32
28° 38.0'N		25	1.65	0.32
115° 31.0'W		36	0.33	0.23
		46	0.18	0.23
		61	0.11	0.17
		76	0.09	0.10
		92	0.04	0.08
		101	0.02	0.06
		121	0.01	0.06
March 30	1417	1	0.53	0.07
	(+8)	11	0.62	0.17
		26	0.64	0.11
Station 5		36	0.64	0.18
28° 32.5'N		46	1.15	0.18
115° 13.0'W		62	0.32	0.18
		77	0.13	0.11
		102	0.08	0.18

BIOS EXPEDITION CHLOROPHYLL AND PHAEOPHYTIN

Date 1970	Local Time	Depth meters	Chlorophyll-a mg/m^3	Phaeophytin mg/m^3
March 31	1127 (+8)	0	0.08	0.03
		50	0.07	0.02
		100	0.43	0.52
Station 6		150	0.04	0.06
28° 19.0'N		200	0.01	0.03
114° 53.0'W				
March 31	1302 (+8)	0	0.13	0.03
		50	0.32	0.08
		100	0.25	0.27
Station 7		150	0.02	0.05
25° 02.0'N		200	0.00	0.03
115° 45.0'W				
April 4	1313 (+7)	0	0.11	0.04
		10	0.10	0.04
		31	0.43	0.36
Station 10		40	0.37	0.25
23° 10.0'N		51	0.22	0.02
108° 15.5'W		66	0.05	0.05
		81	0.01	0.03
		101	0.00	0.02
		126	0.00	0.02
		146	0.00	0.02
		176	0.00	0.01
		204	0.00	0.02
April 5	1123 (+7)	1	0.30	0.09
		11	0.39	0.09
		21	0.43	0.10
Station 11		31	0.42	0.08
23° 38.5'N		41	0.20	0.26
109° 30.5'W		52	0.16	0.19
		67	0.15	0.15
		82	0.07	0.08
April 5	1316 (+7)	1	0.14	0.05
		16	0.17	0.04
		31	0.21	0.06
Station 12		40	0.52	0.36
23° 40.5'N		51	0.36	0.31
109° 27.5'W		66	0.11	0.16
		81	0.03	0.07
		101	0.01	0.04
April 5	1605 (+7)	1	0.15	0.05
		16	0.13	0.03
		31	0.42	0.23
Station 13		40	0.34	0.09
23° 49.0'N		51	0.42	0.25
109° 12.5'W		66	0.25	0.14
		81	0.03	0.03
		101	0.01	0.03

BIOS EXPEDITION CHLOROPHYLL AND PHAEOPHYTIN

Date 1970	Local Time	Depth meters	Chlorophyll-a mg/m^3	Phaeophytin mg/m^3
April 5	1848	1	0.13	0.03
	(+7)	16	0.20	0.03
		31	0.20	0.07
Station 14		41	0.39	0.18
23° 55.0'N		51	0.37	0.27
108° 59.0'W		66	0.26	0.14
		81	0.11	0.08
		101	0.01	0.03
April 5	2137	1	0.16	0.08
	(+7)	17	0.17	0.07
		31	0.23	0.10
Station 15		41	0.41	0.17
24° 02.5'N		53	0.48	0.31
108° 45.0'W		67	0.23	0.33
		82	0.03	0.07
		102	0.01	0.03
April 6	0019	1	5.63	0.74
	(+7)	16	7.86	0.44
		31	0.43	0.13
Station 16		41	0.23	0.13
24° 09.0'N		52	0.12	0.12
108° 31.5'W		67	0.08	0.15
		82	0.02	0.08
		102	0.02	0.09
April 6	0252	1	3.40	0.47
	(+7)	16	3.45	0.37
		30	2.61	0.51
Station 17		38	0.42	0.28
24° 10.9'N		46	0.27	0.18
108° 17.5'W		56	0.06	0.05
		70	0.02	0.04
		86	0.01	0.03
April 6	0547	1	9.34	1.87
	(+7)	6	6.94	1.54
		11	12.08	1.48
Station 18		16	2.69	0.48
24° 23.0'N		21	0.59	0.27
108° 03.0'W		31	0.34	0.16
		41	5.40	0.76
		51	5.36	0.65
April 6	0752	1	4.63	1.00
	(+7)	4	4.00	0.71
		7	3.69	0.78
Station 19		10	3.65	1.34
24° 30.5'N		13	1.35	0.90
107° 53.0'W		16	0.49	0.71

7-TOW EXPEDITION LEGS V, VI, VII

The purposes of 7-TOW Expedition were as follows:

Leg V: to determine the tectonic setting of the Lau Basin by geophysical and geological survey work in the Lau Basin.

Leg VI: to conduct geological and geophysical studies in the central equatorial Pacific.

Leg VII: to collect samples of abyssal and hadal benthic communities in order to allow a more detailed description of community structure in those environments.

The hydrographic work on these three legs of 7-TOW consisted of 16 multiple-cast stations with as many as 22 bottles per cast. The deeper casts were lowered as near the bottom as possible using a pinger and PDR. On Leg VII the bottom sounding was recorded only on Station 148. However, since the procedures used were the same as on the previous legs, it is assumed that the bottom bottle on all deep casts is within 100 meters of the bottom except Station 151 where a pretrip occurred.

Although water samples were collected for additional analysis both on shipboard and ashore, this report includes only depth, temperature, salinity, oxygen, phosphate and silicate.

The 7-TOW Expedition was sponsored by the Office of Naval Research and the National Science Foundation.

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PERSONNEL

7-TOW Expedition Legs V, VI, VII

Ship's Captain:

Phinney, Alan W.	RV Thomas Washington

Personnel Participating in the Collection of Data:

Leg V:

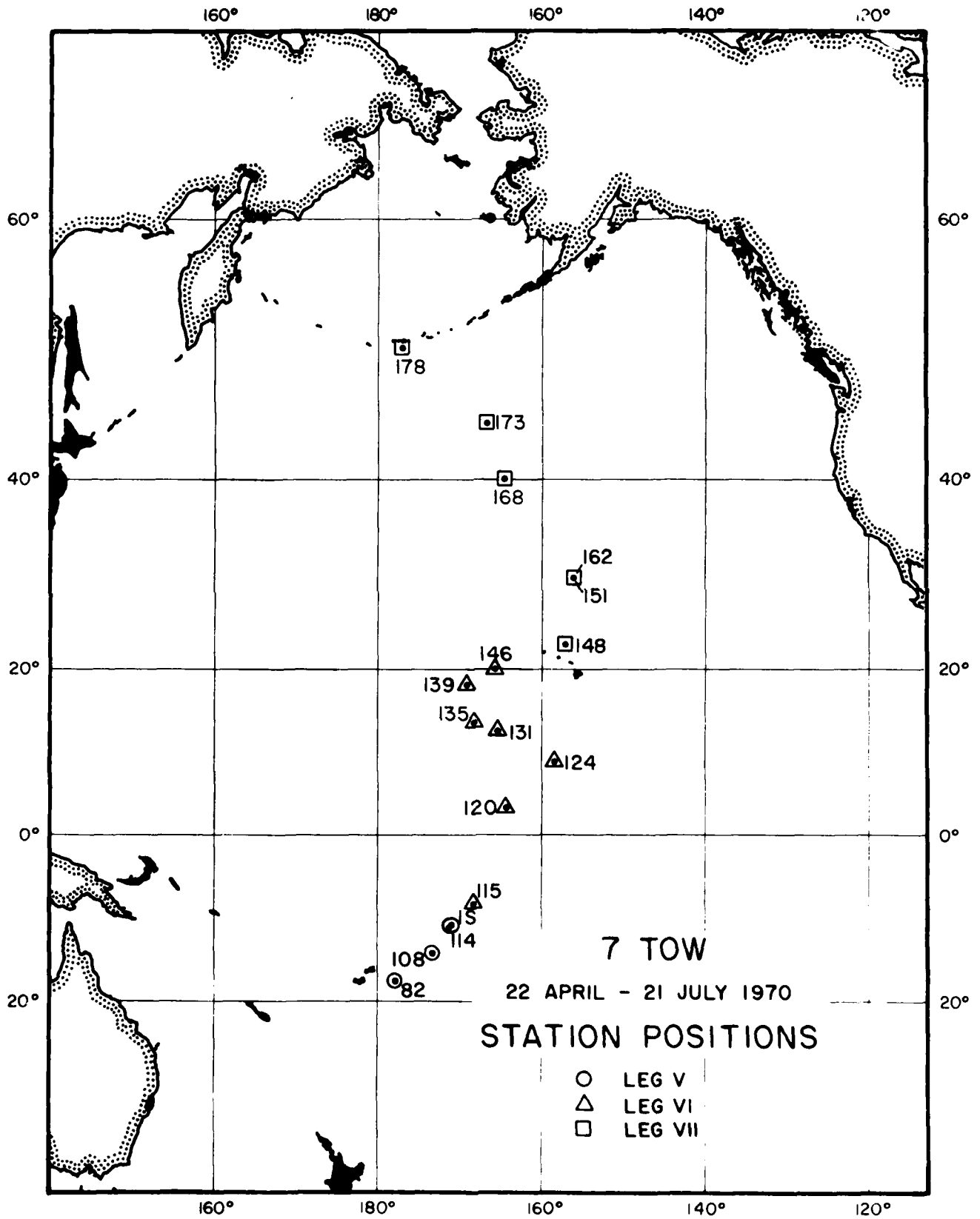
Sclater, John G. Dr.	Research Physicist	Chief Scientist
Ballard, Edward N.	Marine Technician	
Carpenter, Steven	Student, UCSD	
Edmond, John M.	Research Assistant	
Hawkins, James W. Dr.	Assistant Professor	
Hohnhaus, George W.	Marine Technician	
Mantyla, Arnold W.	Laboratory Technician	
Moore, John M.	Programmer	
Natland, James H.	Research Assistant	
Saban, David	Marine Technician	
Wilson, Clark	Graduate Student	

Leg VI:

Winterer, Edward L. Dr.	Professor	] Chief Scientists
Allison, Edwin C. Dr.	Research Associate	
Ballard, Edward N.	Marine Technician	
Corwin, Robert	Student, UCB	
Edmond, John M.	Research Assistant	
Gangloff, Roland	Student, UCB	
Hohnhaus, George W.	Marine Technician	
Jarrard, Richard D.	Research Assistant	
Lonsdale, Peter	Research Assistant	
Mantyla, Arnold W.	Laboratory Technician	
Michel, Robert L.	Research Assistant	
Moore, John M.	Programmer	
Natland, James H.	Research Assistant	
Saban, David	Marine Technician	
Wells, James A.	Marine Technician	
Wilde, Pat	Assistant Research Oceanographer, UCB	
Wilson, Clark	Graduate Student	

Leg VII:

Hessler, Robert R. Dr.	Associate Professor	Chief Scientist
Bieri, Rudolf H. Dr.	Specialist, Physics	
Cisne, John	Graduate Student	
Edgerton, Carol C.	Laboratory Technician	
Edmond, John M.	Research Assistant	
Elston, Marvin	Computer Technician	
Jumars, Peter A.	Graduate Student	
Kaye, Hugh Ross	Electronics Technician	
Koide, Minoru	Specialist, Marine Chemistry	
Luke, Spencer R.	Laboratory Technician	
Michel, Robert L.	Research Assistant	
Rokop, Francis J.	Graduate Student	
Schroeder, Roy	Graduate Student	
Wells, James A.	Marine Technician	
Williams, Peter M. Dr.	Associate Research Chemist	
Wilson, George	Graduate Student	
Zelesky, Beverly	Graduate Student	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7 TOW
22 APRIL - 21 JULY 1970
STATION POSITIONS
LEG V
LEG VI
LEG VII

FIGURE 3

RV THOMAS WASHINGTON 7-TOW EXPEDITION LEG V 15

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
11 03.3S	171 05.7W	4/22/70	0042 GMT	1930M	360	20KT	1	3M 8 S

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DL
0	29.44	34.74		0.21				607.8	0	29.44	34.74		21.742	607.8	0.000
24	29.36	34.73		0.24				605.9	10	29.40	34.73		21.750	607.0	0.061
48	29.32	34.84		0.24				596.7	20	29.37	34.73		21.759	606.2	0.121
102	28.00	35.70		0.35				493.0	30	29.35	34.74		21.771	605.0	0.182
152	25.09	36.18		0.36				370.4	50	29.30	34.87		21.884	594.1	0.302
205	22.65	36.05		0.53				311.0	75	28.88	35.24		22.305	553.9	0.447
									100	28.08	35.66		22.898	496.1	0.574
									125	26.73	35.97		23.557	434.2	0.697
									150	25.22	36.17		24.177	375.0	0.799
									200	22.85	36.09		24.823	313.5	0.975

RV THOMAS WASHINGTON 7-TOW EXPEDITION LEG V 82

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
17 37.1S	177 44.5W	5/20/70	0614 0728 GMT	2451M	160	10KT	1	

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DL
1	27.45	35.26	4.32	0.01	1.			507.5	0	27.45	35.26	4.32	22.790	507.5	0.000
20	27.45	35.26	4.44	0.00	1.			507.5	10	27.45	35.26	4.43	22.790	507.5	0.051
56	26.01	35.75	4.73	0.04	0.			426.5	20	27.45	35.26	4.54	22.790	507.5	0.102
101	23.43	35.72	4.55	0.16	0.			356.3	30	27.45	35.51	4.62	22.975	489.8	0.152
150	21.93	35.73	4.13	0.22	1.			314.7	50	26.44	35.70	4.72	23.448	444.6	0.245
200	20.20	35.62	4.19	0.29	1.			277.7	75	24.86	35.75	4.69	23.975	394.2	0.351
250	18.52	35.63	4.17	0.43	1.			235.6	100	23.48	35.72	4.56	24.360	357.5	0.446
350	14.75	35.16	4.29	0.69	3.			185.4	125	22.62	35.73	4.33	24.616	333.1	0.533
401	13.34	35.05		0.82	4.			168.1	150	21.93	35.73	4.13	24.811	314.7	0.618
450	11.30	34.86	4.12	1.02	6.			141.7	200	20.20	35.62	4.19	25.200	277.7	0.767
501	8.94	34.59	4.33	1.22	10.			123.1	250	18.52	35.63	4.17	25.642	235.6	0.899
551	7.94	34.51	4.47	1.42	12.			114.4	300	16.59	35.41	4.23	25.944	206.9	1.014
625A	6.39	34.37	4.48	1.58	18.			104.2	400	13.37	35.05	4.17	26.377	165.8	1.211
651	6.21	34.37	4.44	1.62	20.			102.0	500	8.98	34.60	4.33	26.824	123.4	1.366
700	5.64	34.37	4.36	1.82	26.			95.2	600	6.83	34.41	4.48	26.996	107.1	1.490
825A	4.79	34.38	3.99	2.10	41.			84.9	700	5.66	34.37	4.36	27.119	95.4	1.601
950A	4.15	34.43	3.86	2.53	56.			74.5	800	4.93	34.38	4.07	27.211	86.7	1.701
1124A	3.33	34.49	3.75	2.72	79.			62.2	1000	3.81	34.46	3.81	27.395	69.3	1.874
1328A	2.85	34.54	3.57	2.62	99.			54.2	1200	3.12	34.51	3.68	27.506	58.8	2.019
1525A	2.60	34.58	3.50	2.57	108.			49.1	1500	2.62	34.58	3.51	27.603	49.6	2.208
1724A	2.45	34.60	3.44					46.4	1750	2.44	34.60	3.43	27.639	46.2	2.350
1924A	2.40	34.61	3.39	2.60	117.			45.2	2000	2.39	34.61	3.39	27.649	45.2	2.490
2176A	2.37	34.61	3.39	2.240	122.			45.0	2250	2.38	34.61	3.38	27.653	44.9	2.630
2428A	2.38	34.62	3.36	1.850	123.			44.3							

RV THOMAS WASHINGTON 7-TO EXPEDITION LEG V

LATITUDE	LONGITUDE	MO/DAY/YR	MESSEDGE TIME	STATION	WIND	SPEED	WEATHER	CURRENT MAG
14 31.9S	173 39.6W	5/27/70	0425 180W GMT	65034	150	22KT		

Z	T	S	O2	PO4	SI03	NO2	NO3	CT	Z	T	S	O2	SIGT	CT	SV
1	28.99	34.463	4.47	0.18	1.			613.2	0	28.99	34.463	4.47	21.686	613.2	0.000
29	28.75	34.853	4.55	0.15	1.			576.9	10	28.99	34.464	4.50	21.686	613.2	0.021
49	28.49	34.881	4.58	0.16	1.			547.2	20	28.99	34.463	4.53	21.686	613.2	0.125
74	27.03	35.759	4.67	0.19	1.			458.7	30	28.72	34.861	4.55	22.074	576.6	0.182
98	25.64	35.811	4.56	0.20	1.			413.1	50	26.44	34.914	4.59	22.206	563.3	0.297
127	24.54	35.913	4.12	0.30	1.			373.8	75	26.97	35.767	4.67	23.827	456.1	0.492
166	22.71	35.811	4.11	0.34	1.			329.9	100	25.56	35.819	4.53	23.810	410.1	0.559
204	20.77	35.731	3.94	0.45	1.			284.2	125	24.61	35.907	4.15	24.166	376.1	0.652
244	19.04	35.549	4.00	0.56	2.			254.0	150	23.49	35.867	4.11	24.467	347.4	0.729
293	15.73	35.179	3.49	0.93	5.			204.9	200	20.97	35.740	3.96	25.084	286.7	0.877
351	13.14	34.924	3.45	1.16	8.			170.8	250	18.64	35.500	3.94	26.515	247.9	1.022
414	10.19	34.664	3.37	1.66	15.			137.4	300	15.38	35.144	3.49	26.916	200.0	1.142
487	7.89	34.526	3.47	1.85	23.			112.5	400	10.81	34.713	3.38	26.805	144.1	1.262
587	6.52	34.462	3.67	2.09	30.			99.0	500	7.64	34.514	3.50	26.966	109.9	1.354
686	5.70	34.449	3.55	2.13	42.			89.9	600	6.39	34.459	3.67	27.096	97.6	1.471
787	5.06	34.470	3.44	2.39	53.			81.1	700	5.60	34.452	3.52	27.191	88.6	1.575
917	4.49	34.479	3.33	2.47	65.			74.3	800	5.00	34.471	3.34	27.278	80.4	1.767
968A	4.32	34.487	3.29	2.48	66.			72.0	1000	4.17	34.489	3.30	27.384	70.3	1.956
1050	4.12	34.497	3.31	2.51	73.			69.2	1200	3.42	34.522	3.25	27.467	60.4	2.084
1077A	3.73	34.497	3.42U	2.48	80.			65.4	1500	2.82	34.566	3.25	27.576	52.1	2.211
1276A	3.21	34.538	3.22	2.50	95.			57.5	1750	2.50	34.594	3.29	27.627	47.3	2.441
1476A	2.86	34.562	3.25	2.53	106.			52.6	2000	2.25	34.611	3.32	27.661	44.0	2.570
1676A	2.59	34.586	3.26	2.51	111.			48.6	2250	2.05	34.629	3.29	27.691	41.2	2.706
1877A	2.36	34.603	3.33	2.54	121.			45.4	2500	1.90	34.639	3.30	27.711	39.3	2.817
2079A	2.19	34.615			127.			43.2	2750	1.81	34.647	3.30	27.725	38.0	2.901
2281A	2.03	34.630	3.29	2.57	135.			40.9	3000	1.70	34.652	3.37	27.737	36.8	3.071
2483A	1.91	34.637	3.29	2.60	140.			39.4	3250	1.64	34.658	3.47	27.747	36.0	3.190
2686A	1.83	34.644	3.33	2.58	145.			38.3	3500	1.48	34.669	3.84	27.767	34.0	3.304
2840A	1.77	34.648	3.25	2.53	146.			37.6	3750	1.33	34.686	4.30	27.792	31.7	3.413
2844B	1.76	34.649	3.27	2.52	149.			37.4	4000	1.20	34.697	4.55	27.809	28.9	3.514
2944B	1.71	34.653	3.36	2.55	146.			36.8	4250	1.11	34.705	4.65	27.822	28.9	3.612
2993A	1.70	34.651			146.			36.8	4500	1.09	34.694	4.75	27.815	29.5	3.708
3123B	1.68	34.655	3.41	2.56	148.			36.4	4750	1.09	34.690	4.69	27.811	29.8	3.807
3244B	1.63	34.657	3.48	2.53	147.			35.9	5000	1.08	34.688	4.64	27.811	29.9	3.906
3467A	1.56	34.663	3.61	2.46	147.			35.0	5250	1.09	34.688	4.61	27.810	29.9	4.006
3546B	1.44	34.671	3.96	2.38E	138.			33.5	5500	1.12	34.691	4.63	27.810	30.0	4.110
3688B	1.36	34.681	4.19	2.28E	131.			32.2	5750	1.15	34.690		27.807	30.2	4.215
3833	1.28	34.690	4.44	2.22	127.			31.0							
3976	1.21	34.696		2.15	122.			30.1							
4175	1.13	34.707	4.60	2.17	120.			28.8							
4372	1.10	34.697	4.73	2.16	122.			29.3							
4574	1.08	34.691	4.76	2.20	126.			29.6							
4781	1.09	34.689			122.			29.9							
4993	1.08	34.688	4.64	2.28	124.			29.9							
5206	1.09	34.688	4.78	2.27	125.			29.9							
5423	1.11	34.690	4.86	2.28	126.			29.9							
5647	1.14	34.691	4.69	2.19	124.			30.0							
5877	1.16	34.687			125.			30.3							

E) THE PHOSPHATE SAMPLES AT 3546 AND 3688 METERS APPEAR TO HAVE BEEN REVERSED. THEY ARE ASSUMED TO NOW BE IN THE CORRECT ORDER.

LATITUDE	LONGITUDE	BOTTOM	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
11 11.5S	171 19.6W	4 29/70	1120 1725	GMT	4777M	140	26KT	

Z	T	S	O2	PO4	SIGT	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DC
1	29.26	34.832	4.44	0.19	0.			595.3	0	29.26	34.832	4.44	21.872	595.3	0.000
28	29.28	34.821	4.48	0.20	0.			596.9	10	29.27	34.827	4.46	21.865	595.9	0.060
47	29.28	34.817	4.47	0.19	0.			597.1	20	29.28	34.823	4.47	21.860	596.5	0.119
72	29.29	34.822	4.44	0.20	0.			597.0	30	29.28	34.820	4.48	21.856	596.8	0.179
96	28.73	35.554	4.34	0.27	1.			526.5	50	29.28	34.817	4.47	21.854	597.1	0.299
125	26.23	36.139	4.04	0.57	0.			407.1	75	29.27	34.900	4.43	21.919	590.8	0.448
166	24.33	36.230	3.72	0.57	0.			344.9	100	28.42	35.654	4.30	22.771	509.3	0.586
205	21.71	35.969	3.68	0.63	1.			290.1	125	26.23	36.139	4.04	23.840	407.1	0.702
245	19.55	35.674	3.72	0.73	1.			257.5	150	25.01	36.270	3.82	24.319	361.5	0.800
294	15.15	35.142	2.69	1.30	8.			195.3	200	22.05	36.026	3.69	25.002	296.4	0.968
344	12.67	34.909	2.50	1.62	13.			163.0	250	19.10	35.610	3.62	25.480	251.0	1.108
411	9.95	34.710	2.60	1.90	20.			130.0	300	14.79	35.105	2.67	26.117	190.4	1.223
484A	8.12	34.601	2.75	2.11	29.			110.2	400	10.34	34.735	2.58	26.706	134.5	1.395
543A	7.30	34.564	2.89	2.22	34.			101.5	500	7.85	34.590	2.80	26.993	107.3	1.524
592A	6.85	34.543	2.86	2.18	37.			97.1	600	6.77	34.542	2.83	27.111	96.2	1.635
641A	6.35	34.534	2.68	2.43	43.			91.5	700	5.89	34.520	2.71	27.208	87.0	1.736
690A	5.95	34.521	2.70	2.45	48.			87.5	800	5.42	34.514	2.81	27.263	81.6	1.830
789A	5.47	34.513	2.77	2.52	54.			82.5	1000	4.50	34.524	2.94	27.376	71.0	2.003
839A	5.23	34.517	2.94	2.47	58.			79.5	1200	3.82	34.542	3.10	27.462	62.9	2.157
939A	4.77	34.516	2.88	2.45	66.			74.5	1500	2.98	34.582	3.23	27.574	52.3	2.361
988B	4.78	34.519	2.95	2.49	66.			74.4	1750	2.42	34.612	3.39	27.647	45.4	2.507
1040A	4.30	34.528	2.94	2.60	76.			68.7	2000	2.15	34.634	3.40	27.688	41.5	2.640
1043B	4.35	34.525	3.00	2.57	75.			69.4	2250	1.98	34.647	3.39	27.712	39.3	2.765
1241B	3.68	34.546	3.12	2.62	90.			61.2	2500	1.84	34.659	3.52	27.733	37.3	2.885
1439B	3.16	34.571			102.			54.6	2750	1.73	34.670	3.60	27.749	35.7	3.002
1638F	2.62	34.601	3.29	2.57	116.			47.7	3000	1.66	34.676	3.49	27.760	34.7	3.116
1838F	2.31	34.617	3.45	2.60	125.			44.0	3250	1.60	34.676	3.59	27.764	34.2	3.230
2038H	2.12	34.637	3.38	2.60	139.			41.0	3500	1.55	34.683	3.61	27.773	33.5	3.342
2239H	1.99	34.646	3.39	2.61	136.			39.3	3750	1.45	34.694	4.03	27.789	31.9	3.452
2441C	1.87	34.655	3.48	2.60	138.			37.8	4000	1.31	34.690	4.38	27.796	30.4	3.557
2642C	1.77	34.667	3.59	2.59	141.			36.1	4250	1.09	34.699	4.63	27.819	29.1	3.657
2844B	1.71	34.672	3.60	2.46	140.			35.3	4500	1.05	34.699	4.60	27.814	29.6	3.753
2962C	1.68	34.678	3.46	2.51	146.			34.7	4750	1.05	35.062	4.82	28.113	30.2	3.850
3047B	1.64	34.672		2.52	142.			34.4							
3155C	1.62	34.680	3.54	2.50	148.			34.1							
3199B	1.61	34.676						34.3							
3359C	1.58	34.681	3.62	2.48	145.			33.7							
3456C	1.56	34.681	3.59	2.38	146.			33.6							
3558C	1.54	34.683	3.67	2.35	142.			33.3							
3659C	1.50	34.682	3.83	2.41	142.			33.1							
3759C	1.44	34.694	4.05	2.37	136.			31.8							
3864C	1.41	34.699			128.			31.2							
3967C	1.35	34.700	4.28	2.26	123.			30.7							
4059C	1.23	34.701	4.56	2.24	123.			29.9							
4163C	1.13	34.704	4.65	2.23	126.			29.0							
4315C	1.08	34.696	4.60	2.16	128.			29.3							
4474C	1.05	34.689			127.			29.6							
4627C	1.04	34.688	4.60	2.16	128.			29.6							
4670C	1.04	34.687	4.88U	2.20	130.			29.7							
4711C	1.05	34.689	4.70	2.27	129.			29.6							
4742C	1.05	34.690	4.80	2.21	129.			29.5							
4754C	1.06	34.692	4.90	2.17				29.4							
4768C	1.06	34.694	4.94	2.22	126.			29.3							
4774C	1.05	34.693		2.23				29.3							

LATITUDE 8 30.7S LONGITUDE 168 39.6W MO/DAY/YR 6/ 5/70 MESSENGER TIME 1255 1830 GMT BOTTOM 5173M WIND 360 SPEED 8KT WEATHER 6 DOMINANT WAVES 160 12 10

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	UT	DD
1	28.39	35.534	4.53	0.18	0.			660.9	0	28.39	35.534	4.53	21.189	660.9	0.000
30	29.20	35.321	4.48	0.19	0.			558.3	10	29.20	35.321	4.51	22.259	558.3	0.061
50	29.20	35.322	4.45	0.32	0.			558.2	20	29.20	35.321	4.50	22.259	558.3	0.117
76	29.20	35.336	4.43	0.26	1.			557.2	30	29.20	35.321	4.48	22.259	558.3	0.173
100	28.68	35.790	4.36	0.23	1.			508.0	50	29.20	35.322	4.45	22.259	558.2	0.285
130	26.26	36.171	4.15	0.37	1.			405.7	75	29.20	35.335	4.43	22.269	557.2	0.425
171	22.54	36.101	3.76	0.63	1.			304.3	100	28.68	35.790	4.36	22.784	506.0	0.559
210	19.49	35.681	3.61	0.86	3.			255.5	125	26.74	36.124	4.19	23.669	423.5	0.677
250	16.55	35.277	3.20	1.13	6.			215.7	150	24.44	36.198	3.95	24.436	350.3	0.775
300	12.63	34.911	2.35	1.81	15.			162.1	200	20.24	35.804	3.65	25.329	265.3	0.932
355	10.23	34.751	2.25	1.90	24.			131.6	250	16.55	35.277	3.20	25.851	215.7	1.056
419	8.94	34.673	2.34	2.07	28.			116.9	300	12.63	34.911	2.35	26.416	162.1	1.154
490	7.94	34.609	2.43		36.			107.0	400	9.22	34.693	2.30	26.862	119.8	1.303
549	7.34	34.578	2.58	2.18	40.			101.0	500	7.83	34.604	2.46	27.008	105.9	1.425
599	6.81	34.552	2.55	2.38	43.			96.0	600	6.80	34.553	2.55	27.115	95.9	1.535
649	6.47	34.541	2.59	2.56	45.			92.4	700	6.18	34.533	2.58	27.182	89.3	1.637
698	6.19	34.534	2.58	2.49	50.			89.5	800	5.43	34.517	2.66	27.264	81.7	1.732
798	5.44	34.517	2.66	2.74	61.			81.8	1000	4.42	34.535	2.63	27.393	69.4	1.903
848	5.13	34.518	2.64	2.65	67.			78.3	1200	3.57	34.557	2.74	27.499	59.3	2.052
938A	4.69	34.522	2.63	2.73	74.			73.2	1500	2.81	34.598	2.89	27.603	49.6	2.244
949	4.68	34.525	2.60	2.74				72.8	1750	2.46	34.618	3.01	27.649	45.2	2.386
1038A	4.19	34.538	2.65	2.81	82.			66.8	2000	2.21	34.634	3.07	27.683	41.9	2.520
1050	4.15	34.538	2.65	2.87	87.			66.4	2250	1.99	34.651	3.17	27.714	39.0	2.645
1238A	3.43	34.566	2.77	2.64	104.			57.4	2500	1.83	34.660	3.24	27.734	37.1	2.765
1438A	2.92	34.591			106.			51.0	2750	1.74	34.670	3.36	27.749	35.7	2.882
1638A	2.61	34.608	2.95	2.86	122.			47.1	3000	1.63	34.675	3.50	27.762	34.4	2.995
1838A	2.35	34.623	3.05	2.78	126.			43.9	3250	1.55	34.681	3.67	27.772	33.5	3.106
2037A	2.18	34.636	3.07	2.84	135.			41.5	3500	1.50	34.685	3.69	27.779	32.9	3.216
2237A	2.00	34.650	3.17	2.79	144.			39.1	3750	1.45	34.694	3.83	27.789	31.9	3.325
2436A	1.86	34.657	3.21	2.79	147.			37.6	4000	1.40	34.693	3.87	27.793	31.6	3.433
2634A	1.77	34.666	3.32	2.78	148.			36.2	4250	1.36	34.703	4.30	27.803	30.7	3.540
2836A	1.71	34.671	3.40	2.67	146.			35.4	4500	1.08	34.698	4.56	27.819	29.1	3.642
2998A	1.63	34.683 U	3.50	2.63	147.				4750	1.07	34.708	4.69	27.827	28.3	3.740
3035A	1.59		3.53	2.56	146.				5000	1.09	34.711	4.72	27.828	28.2	3.836
3182A	1.55	34.680			146.			33.6							
3203B	1.55	34.680	3.64	2.65	147.			33.6							
3407B	1.52	34.681	3.73	2.68	146.			33.3							
3554[illegible]	1.49	34.666	3.68		146.			32.7							
3664[illegible]	1.46	34.666	3.81	2.54	140.			32.5							
3792[illegible]	1.45	34.697	3.64	2.62				31.6							
3920[illegible]	1.41	34.694	3.88	2.62				31.6							
4047[illegible]	1.39	34.692	3.87	2.62				31.6							
4175[illegible]	1.38	34.699	4.13	2.62				31.0							
4329[illegible]	1.34	34.705	4.46	2.57				30.3							
[illegible]481[illegible]	1.08														
4633[illegible]	1.07	34.708			126.			28.3							
4833[illegible]	1.08	34.708	4.74	2.55	128.			28.4							
5033[illegible]	1.09														
5072[illegible]	1.09	34.711	4.71	2.44	128.			28.2							
5101[illegible]	1.11	34.710	4.74	2.43	126.			28.4							
5117[illegible]	1.13	34.711	4.74	2.38	126.			28.5							
5126[illegible]	1.12	34.707	4.74	2.42	126.			28.7							
5131[illegible]	1.12														

RV THOMAS WASHINGTON — 7-TOW EXPEDITION LEG VI — 120

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
3 13.2N	164 48.5W	6/ 9/70	1934 0051 GMT	5603M	120	16KT	1	090 8 10

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DE
1	28.02	34.588	4.60	0.19	1.			573.5	0	28.02	34.588	4.60	22.100	573.5	0.000
30	28.03	34.583	4.67	0.19	2.			574.2	10	28.02	34.587	4.62	22.098	573.7	0.057
50	28.04	34.583	4.63	0.13	1.			574.5	20	28.03	34.585	4.65	22.095	574.0	0.115
76	27.55	34.892	4.43	0.35	1.			537.0	30	28.03	34.583	4.67	22.093	574.2	0.172
101	26.78	34.932	4.18	0.42	2.			510.5	50	28.04	34.583	4.63	22.090	574.5	0.288
131	16.42	34.692	2.76	1.10	13.			255.5	75	27.58	34.879	4.44	22.463	536.8	0.427
173	10.63	34.556	2.43	1.63				152.6	100	26.81	34.929	4.20	22.747	511.6	0.560
212	10.66	34.738	2.15	1.94	25.			139.7	125	18.70	34.760	3.05	24.859	310.2	0.663
252	10.50	34.756	1.56	2.11	26.			135.7	150	12.80	34.643	2.61	26.175	184.9	0.726
301	9.93	34.714	1.62	2.08	28.			129.4	200	10.65	34.683	2.25	26.810	143.7	0.810
356	9.37	34.683	1.62	2.26	31.			122.8	250	10.51	34.757	1.59	26.893	135.8	0.883
420	8.77	34.642	2.03	2.15	32.			116.7	300	9.94	34.716	1.62	26.759	129.5	0.952
490	8.16	34.609	2.03	2.27	35.			110.2	400	8.95	34.659	1.90	26.875	118.5	1.083
549		34.599	1.62	2.48	39.				500	8.09	34.607	1.98	26.972	109.4	1.206
598	7.29	34.581	1.23	2.69	46.			100.1	600	7.27	34.582	1.21	27.072	99.9	1.320
648	6.71	34.570	0.98	2.89	53.			93.3	700	6.12	34.553	1.34	27.205	87.2	1.423
698	6.14	34.554	1.33	2.85	57.			87.4	800	5.47	34.546	1.57	27.281	80.1	1.516
797	5.49	34.546	1.56	2.79	65.			80.2	1000	4.59	34.552	1.89	27.388	70.0	1.687
847	5.24	34.547	1.66	2.82	70.			77.3	1200	3.92	34.572	2.02	27.475	61.9	1.840
938A	4.75	34.550	1.83	2.75	79.			71.7	1500	3.01	34.603	2.09	27.588	51.0	2.041
948	4.76	34.550	1.83	2.83	78.			71.8	1750	2.56	34.621	2.29	27.644	45.7	2.187
1038A	4.39	34.555	1.94	2.81	84.			67.6	2000	2.20	34.639	2.56	27.688	41.5	2.321
1049	4.35	34.557	1.94	2.79	85.			67.0	2250	1.96	34.654	2.67	27.719	38.5	2.445
1236A	3.83	34.569	2.05	2.82	95.			60.9	2500	1.84	34.661	2.82	27.734	37.1	2.565
1436A	3.18	34.594	2.08	2.84	110.			53.0	2750	1.73	34.665	2.91	27.745	36.1	2.682
1634A	2.73	34.615	2.14	2.86	124.			47.5	3000	1.65	34.670	3.12	27.756	35.1	2.797
1832A	2.45	34.624	2.40	2.78	126.			44.6	3250	1.59	34.676	3.28	27.765	34.2	2.910
2031A	2.16	34.641	2.56	2.72	131.			41.0	3500	1.51	34.681	3.44	27.775	33.3	3.022
2229A	1.97	34.653	2.66	2.70	139.			38.7	3750	1.46	34.689	3.61	27.785	32.5	3.132
2427A	1.87	34.659	2.77	2.65	140.			37.5	4000	1.40	34.691	3.93	27.791	31.8	3.241
2625A	1.79	34.663	2.89	2.65	143.			36.6	4250	1.33	34.696	4.02	27.800	30.9	3.348
2824A	1.71	34.666						35.8	4500	1.26	34.701	4.24	27.809	30.0	3.452
2830B	1.71	34.670	2.93	2.58	149.			35.5	4750	1.24	34.704	4.30	27.813	29.7	3.555
3020A	1.64	34.669	3.12	2.57				35.1	5000	1.24	34.707	4.35	27.814	29.6	3.659
3028B	1.66	34.671	3.11	2.59	147.			35.0	5256	1.27	34.707	4.45	27.813	29.7	3.765
3226B	1.59	34.674	3.26	2.55	148.			34.3							
3350B	1.57	34.680	3.35	2.53	148.			33.7							
3475A	1.52														
3599B	1.49	34.682	3.50	2.49	143.			33.0							
3724B	1.47	34.689	3.59	2.48	143.			32.4							
3849B	1.43	34.687	3.69	2.45	140.			32.2							
3974B	1.41	34.690	3.92	2.43	140.			31.9							
4124B	1.35	34.694		2.43	138.			31.2							
4276B	1.32	34.696	4.02	2.39	134.			30.8							
4427B	1.26	34.699	4.20	2.34	130.			30.2							
4631B	1.25	34.704	4.27	2.31	128.			29.6							
4836	1.23														
5042B	1.25	34.707	4.36	2.29	129.			29.5							
5250B	1.27	34.707	4.45	2.29	127.			29.7							
5292B	1.28	34.702	4.42	2.31	127.			30.1							
5323B	1.28	34.701	4.44	2.29	127.			30.2							

RV THOMAS WASHINGTON — 7-TOW EXPEDITION LEG VI — 124

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
8 54.5N	158 34.7W	6/12/70	2009 0039 GMT	4993M	050	20KT	2	060 8 11

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DE
0	27.48	34.599	4.62	0.27				555.9	0	27.48	34.599	4.62	22.284	555.9	0.000
29	27.48	34.595	4.65	0.23	2.			556.2	10	27.48	34.598	4.63	22.282	556.1	0.056
48	27.46	34.595	4.62	0.30	2.			556.2	20	27.48	34.597	4.64	22.281	556.2	0.111
73	27.48	34.677	4.57	0.31	2.			550.3	30	27.48	34.596	4.65	22.281	556.2	0.167
98	27.02	34.900	4.41	0.33	2.			520.1	50	27.48	34.603	4.62	22.286	555.7	0.279
127	13.60	34.434	1.91	1.74	18.			215.6	75	27.49	34.695	4.56	22.368	547.9	0.417
168	11.96	34.727	0.12	2.52	29.			163.2	100	26.15	34.814	4.26	22.867	500.2	0.549
207	11.08	34.728	0.27	2.51	31.			147.6	125	14.58	34.403	2.11	25.621	237.7	0.642
247	10.56	34.707	0.39	2.53	33.			140.3	150	12.68	34.596	0.66	26.162	186.3	0.696
296	10.15	34.698	0.38	2.55	35.			134.2	200	11.20	34.740	0.24	26.555	148.9	0.782
348	9.66	34.683	0.32	2.61	37.			127.4	250	10.53	34.707	0.39	26.650	139.9	0.857
417	9.24	34.658	0.35	2.69	39.			122.7	300	10.11	34.698	0.38	26.716	133.6	0.926
487	8.54	34.619	0.33	2.91	46.			115.0	400	9.34	34.666	0.34	26.821	125.7	1.064
557	7.70	34.575	0.19	3.04	55.			106.2	500	8.39	34.612	0.30	26.929	115.4	1.192
635	6.70	34.537	0.29	3.10	68.			95.7	600	7.13	34.551	0.23	27.068	100.3	1.308
712	6.04	34.530	0.37	3.18	74.			87.9	700	6.13	34.530	0.35	27.186	89.0	1.412
788	5.43	34.533	0.76	3.09	82.			80.5	800	5.36	34.534	0.79	27.285	79.7	1.506
878	4.98	34.541	0.90	3.16	89.			74.9	1000	4.40	34.557	1.13	27.414	67.5	1.673
966A	4.48	34.553	1.05	3.09	99.			68.6	1200	3.62	34.577	1.54	27.510	58.4	1.819
1007	4.38	34.557	1.15	3.21	98.			67.3	1500	2.99	34.598	1.86	27.586	51.1	2.014
1161A	3.73	34.572	1.50	2.98	113.			59.7	1750	2.60	34.621	2.14	27.648	45.3	2.154
1356A	3.26	34.586	1.67	3.01	129.			54.3	2000	2.22	34.638	2.22	27.682	42.0	2.293
1552A	2.90	34.601	1.93	2.91	130.			50.0	2250	2.09	34.646	2.46	27.707	39.7	2.420
1748A	2.50	34.619	2.14	2.86	142.			45.3	2500	1.89	34.656	2.58	27.726	37.9	2.543
1946A	2.27	34.632	2.17	2.78	144.			42.5	2750	1.82	34.663	2.71	27.737	36.6	2.663
2143A	2.12	34.640	2.38	2.75	149.			40.8	3000	1.73	34.670	2.87	27.748	35.9	2.781
2341A	1.97	34.650	2.51	2.73	151.			39.0	3250	1.65	34.673	3.07	27.756	35.2	2.897
2539A	1.88	34.657	2.59	2.69	151.			37.7	3500	1.58	34.677	3.28	27.768	33.4	3.011
2739A	1.82	34.662	2.70	2.71	152.			36.9	3750	1.48	34.681	3.51	27.777	33.1	3.124
2937A	1.75	34.666	2.84	2.730	157.			36.1	4000	1.39	34.684	3.73	27.786	32.2	3.234
3136A	1.68	34.668	2.94	2.62	155.			35.4	4250	1.35	34.689	3.90	27.794	31.5	3.343
3336A	1.59	34.674	3.17	2.59	155.			34.3	4500	1.33	34.690	4.07	27.795	31.4	3.451
3535A	1.55	34.677	3.30	2.57	152.			33.8							
3734A	1.49	34.680	3.50	2.53	149.			33.2							
3841B	1.45	34.682	3.57	2.50	148.			32.8							
3931A	1.40														
4034B	1.39	34.685	3.76	2.43	144.			32.1							
4177B	1.37	34.688	3.82	2.44	145.			31.							
4321B	1.34	34.688	3.98	2.38	139.			31.1							
4465B	1.33	34.689	4.06	2.38	137.			31.							
4608B	1.34	34.691	4.10	2.36	141.			31.1							

RV THOMAS WASHINGTON — 7-TON EXPEDITION LEG VI — 141

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
12 37.8N	165 39.6W	6/18/70	1045 2019 GMT	5309M	070	22KT	1	090 15 F

Z	T	S	O2	PO4	SIGT	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
0	26.50	34.657	4.71	0.14	1.			521.9	0	26.50	34.657	4.71	22.640	521.9	0.000
10	26.40	34.648	4.77	0.13	1.			519.5	10	26.48	34.656	4.72	22.644	521.5	0.052
20	26.36	34.755	4.86	0.09	1.			457.8	20	26.47	34.655	4.73	22.648	521.1	0.104
30	22.36	34.914	4.59	0.16	2.			385.1	30	26.45	34.653	4.74	22.652	520.7	0.157
40	19.05	34.865	4.07	0.43	4.			303.9	50	26.42	34.650	4.76	22.661	519.9	0.261
50	15.88	34.449	2.76	1.37	15.			220.1	75	25.58	34.693	4.84	22.954	491.8	0.388
75	11.04	34.412	1.74	2.08	28.			169.9	100	23.86	34.814	4.80	23.564	453.6	0.505
100	10.37	34.574	0.56	2.96	34.			147.0	125	22.04	34.930	4.55	24.180	374.8	0.607
125	9.68	34.609	0.47	2.81	37.			133.2	150	20.05	34.916	4.26	24.704	324.9	0.695
150	8.98	34.575	0.44	2.73	43.			124.8	200	14.04	34.458	2.79	25.786	221.9	0.885
175	8.59	34.589	0.54	2.75	44.			117.9	250	11.05	34.411	1.76	26.328	170.5	0.934
200	8.04	34.563	0.54	2.81	49.			111.9	300	10.37	34.572	0.58	26.575	147.2	1.018
601	7.19	34.536	0.64	2.93	59.			102.2	400	9.00	34.578	0.44	26.866	125.1	1.162
701	6.37	34.519	0.61	3.09	70.			92.8	500	8.06	34.569	0.54	26.943	112.1	1.289
800	5.57	34.518	0.72	3.13	80.			83.3	600	7.20	34.537	0.64	27.047	102.2	1.405
897A	5.04	34.524	0.81	3.10	90.			77.0	700	6.38	34.520	0.61	27.146	96.9	1.512
900	5.03	34.524	0.85	3.13	90.			76.7	800	5.57	34.518	0.72	27.247	83.3	1.611
999	4.54	34.535	1.00	3.15	97.			71.1	1000	4.59	34.535	1.00	27.375	71.1	1.786
1097A	4.40	34.541	1.11	3.04	103.			68.7	1200	3.99	34.553	1.29	27.453	63.8	1.942
1297A	3.56	34.566	1.47	2.86	117.			58.6	1500	2.97	34.594	1.73	27.585	51.3	2.146
1497A	2.98	34.593	1.73	2.81	146.U			51.3	1750	2.53	34.611	1.99	27.658	46.2	2.295
1697A	2.63	34.607	1.92	2.86	141.			47.3	2000	2.16	34.635	2.25	27.466	41.8	2.427
1897A	2.27	34.642	2.17	2.72	133.U			43.5	2250	1.97	34.647	2.45	27.712	39.2	2.555
2097A	2.07	34.639	2.31	2.64	149.			40.5	2500	1.84	34.655	2.63	27.729	37.6	2.673
2298A	1.95	34.646	2.50	2.59	156.			38.9	2750	1.75	34.663	2.77	27.743	36.3	2.791
2497A	1.84	34.654	2.63	2.68	156.			37.6	3000	1.67	34.669	2.84	27.753	35.3	2.907
2697A	1.76	34.661	2.76	2.65	156.			36.5	3250	1.57	34.674	3.04	27.765	34.2	3.021
2898A	1.71	34.666	2.79	2.47U	156.			35.8	3500	1.52	34.680	3.29	27.773	33.4	3.153
3098A	1.65								3750	1.47	34.685	3.43	27.779	32.9	3.244
3297A	1.55	34.675	3.09	2.67U	161.			34.8	4000	1.45	34.686	3.57	27.783	32.5	3.344
3498A	1.52	34.679	3.29	2.49	158.			33.5	4250	1.41	34.691	3.74	27.790	31.9	3.465
3698A	1.48	34.682	3.34	2.49	153.			33.0	4500	1.39	34.693	3.92	27.793	31.6	3.575
3798A	1.47	34.682	3.47	2.50	153.			32.9	4750	1.34	34.697	4.10	27.800	30.9	3.685
3948A	1.45	34.685	3.54	2.49	154.			32.7	5000	1.36	34.698	4.13	27.799	31.0	3.795
4097A	1.44	34.689	3.63	2.52	148.			32.2							
4248A	1.41	34.690	3.73	2.49	147.			31.9							
4398A	1.41	34.689	3.83	2.52	142.			32.0							
4548A	1.38	34.693	3.96	2.52	127.			31.5							
4698A	1.35	34.697	4.09	2.43	135.			30.9							
4848A	1.33	34.696	4.34U	2.54	134.			30.9							
4903A	1.34	34.700						30.7							
4998A	1.36	34.695	3.92U	2.35	132.			31.2							
4997A	1.36	34.697	4.13		133.			31.0							
5092A	1.37	34.696	4.20		133.			31.2							
5198A	1.37	34.700	4.23	2.31	129.			30.9							

RV THOMAS WASHINGTON — 7-TON EXPEDITION LEG VI — 142

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
15 30.4N	168 22.9W	6/21/70	1250 1740 GMT	5588M	100	24KT	1	100 12 10

Z	T	S	O2	PO4	SIGT	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
1	26.47	34.680	4.7	0.14	2.			519.3	0	26.47	34.680	4.70	22.667	519.5	0.000
10	26.46	34.678	4.65	0.15	2.			519.7	10	26.47	34.680	4.69	22.665	519.4	0.052
20	25.23	34.716	4.89	0.11	2.			479.9	20	26.47	34.680	4.68	22.664	519.5	0.104
30	24.45	34.810	4.84	0.13	2.			450.7	30	26.48	34.679	4.67	22.663	519.6	0.156
50	22.20	34.913	4.52	0.23	2.			380.9	50	26.48	34.679	4.64	22.662	519.7	0.260
75	18.20	34.779	3.92	0.59	5.			289.8	75	26.48	34.678	4.77	22.662	519.7	0.391
100	12.80	34.556	3.20	1.34	17.			206.0	100	24.88	34.750	4.87	23.209	467.5	0.519
125	10.25	34.569	1.79	2.17	32.			160.9	125	24.27	34.852	4.82	23.457	443.8	0.650
150	9.14	34.612	1.11	2.50	42.			139.3	150	22.97	34.900	4.64	23.888	402.6	0.757
200	8.52	34.654	0.67	2.65	46.			126.9	200	18.20	34.779	3.92	25.073	289.8	0.915
251	7.87	34.670	0.61	2.76	54.			116.4	250	12.89	34.363	3.22	25.940	207.3	1.041
300	7.27	34.679	0.62	2.82	59.			107.5	300	10.28	34.358	1.82	26.423	161.4	1.136
401	6.56	34.692	0.82	2.91	67.			97.2	400	8.52	34.454	0.67	26.787	126.9	1.288
499	5.91	34.705	0.95	2.91	74.			88.3	500	7.27	34.479	0.62	26.992	107.5	1.413
749	5.48	34.713	0.97	2.97	82.			82.6	600	6.56	34.492	0.82	27.100	97.2	1.523
897A	5.08	34.720	1.02	3.04	90.			77.3	700	5.91	34.506	0.95	27.194	88.2	1.625
900	4.99	34.725	1.06		88.			76.2	800	5.48	34.513	0.97	27.254	82.4	1.720
998	4.52	34.737	1.17	3.05	96.			70.3	1000	4.51	34.537	1.17	27.385	70.2	1.893
1097A	4.36	34.744	1.31	3.05	106.			66.1	1200	3.78	34.559	1.46	27.480	61.9	2.044
1297A	3.80	34.771	1.57	3.02	122.			57.6	1500	2.87	34.595	1.84	27.595	50.3	2.243
1497A	2.99	34.793	1.83	3.00	133.			50.6	1750	2.46	34.613	2.07	27.645	45.6	2.387
1697A	2.56	34.807	2.00	2.84	141.			46.7	2000	2.12	34.635	2.37	27.691	41.2	2.519
1897A	2.25	34.824	2.24	2.87	146.			43.0	2250	1.93	34.648	2.50	27.717	38.8	2.645
2098A	2.03	34.841	2.45	2.83	149.			40.0	2500	1.82	34.656	2.70	27.732	37.3	2.762
2298A	1.91	34.848	2.61	2.78	156.			38.6	2750	1.71	34.664	2.83	27.747	36.0	2.879
2497A	1.82	34.855	2.69	2.74	156.			37.4	3000	1.64	34.670	3.00	27.758	34.8	2.993
2697A	1.75	34.862	2.80	2.74	156.			36.2	3250	1.59	34.675	3.21	27.768	34.0	3.105
2897A	1.68	34.867	2.92	2.68	155.			35.4	3500	1.53	34.681	3.30	27.775	33.5	3.214
3097A	1.58	34.872	3.08	2.68	160.			34.4	3750	1.47	34.681	3.44	27.778	33.0	3.328
3248A	1.53	34.875	3.24	2.66	155.			33.8	4000	1.43	34.686	3.61	27.784	32.4	3.438
3398A	1.48	34.880	3.30	2.62	158.			33.1	4250	1.38	34.689	3.84	27.790	31.9	3.548
3548A	1.45	34.881	3.20U	2.61	153.			33.5	4500	1.35	34.694	4.02	27.796	31.3	3.657
3698A	1.44	34.880	3.40	2.56	154.			33.2	4750	1.33	34.697	4.16	27.801	30.9	3.764
3798A	1.44	34.882	3.53	2.58	155.			32.7	5000	1.32	34.700	4.31	27.804	30.6	3.874
3948A	1.42	34.887	3.67	2.52	148.			32.2	5250	1.34	34.702	4.33	27.804	30.5	3.984
4097A	1.38	34.888	3.86	2.48	143.			31.8	5500	1.37	34.713	4.32	27.811	31.0	4.094
4248A	1.36	34.893	4.01	2.43	141.			31.3							
4398A	1.33	34.895	4.07	2.36	137.			31.0							
4548A	1.33	34.899	4.28	2.41	134.			30.7							
4698A	1.31	34.900	4.33	2.33	132.			30.5							
4848A	1.34	34.702	4.13	2.35	132.			30.8							
4898A	1.34	34.700	4.38	2.35	132.			30.8							
4998A	1.34	34.699	4.30	2.29	132.			31.1							
5098A	1.34	34.700	4.35	2.35	132.			30.9							
5198A	1.33	34.694	4.43	2.38	132.			31.0							
5298A	1.33	34.698	4.40		129.			31.1							

RV THOMAS WASHINGTON — 7-TOW EXPEDITION LEG VI — 139

LATITUDE 18 08.6N | LONGITUDE 169 11.3W | MO/DAY/YR 6/23/70 | MESSENGER TIME 1955 0856 GMT | BOTTOM 5006M | WIND 040 | SPEED 10KT | WEATHER 1 | DOMINANT WAVES 040 6 10

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
1	26.75	34.846	4.72	0.13	2.			515.8	0	26.75	34.846	4.72	22.703	515.8	0.000
60	26.47	34.961	4.76	0.06	1.			499.1	10	26.71	34.863	4.73	22.750	513.3	0.051
90	25.25	34.991	4.97	0.04	1.			460.7	20	26.66	34.882	4.73	22.769	510.4	0.103
114	23.83	35.052	4.93	0.07	1.			415.6	30	26.61	34.902	4.74	22.789	507.6	0.154
159	22.05	35.082	4.75	0.11	1.			364.7	50	26.52	34.941	4.75	22.848	501.9	0.255
200	20.13	35.088	4.79	0.15	2.			314.4	75	25.92	34.979	4.87	23.060	481.7	0.379
250	17.56	34.860	4.59	0.34	4.			269.0	100	24.77	35.012	4.96	23.442	445.2	0.495
299	14.87	34.585	4.63	0.56	7.			230.2	125	23.56	35.059	4.90	23.837	407.5	0.603
349	12.00	34.296	4.45	1.04	15.			195.7	150	22.45	35.079	4.79	24.172	375.5	0.702
398	9.60	34.166	3.44	1.70	29.			164.7	200	20.13	35.088	4.79	24.814	314.4	0.878
448	8.38	34.151	2.86	2.30	40.			147.4	250	17.56	34.860	4.59	25.291	269.0	1.028
498	7.25	34.166	2.00	2.41	55.			130.5	300	14.81	34.580	4.63	25.707	229.4	1.156
597	6.01	34.275	1.09	2.82	73.			106.6	400	9.54	34.166	3.42	26.398	163.9	1.361
697	5.46	34.400	0.93	3.01	83.			90.8	500	7.21	34.169	1.97	26.756	129.9	1.516
796	4.99	34.462	1.10	3.00	90.			80.9	600	5.99	34.280	1.09	27.007	106.1	1.642
894	4.73	34.490	1.08	3.00	96.			76.0	700	5.44	34.403	0.93	27.172	90.4	1.749
894A	4.68	34.492	1.07	2.94	100.			75.3	800	4.98	34.464	1.10	27.274	80.7	1.843
993	4.34	34.510	1.06	3.10	106.			70.4	1000	4.31	34.512	1.06	27.387	70.1	2.013
1095A	3.98	34.526	1.15		112.			65.6	1200	3.65	34.542	1.26	27.479	61.3	2.164
1296A	3.38	34.554	1.37	2.99	127.			57.8	1500	2.92	34.580	1.66	27.579	51.8	2.363
1496A	2.93	34.579	1.65	2.91	137.			52.0	1750	2.36	34.609	2.03	27.650	45.1	2.508
1696A	2.45	34.602	1.96	2.78	145.			46.2	2000	2.06	34.629	2.28	27.691	41.3	2.639
1897A	2.17	34.622	2.14	2.81	152.			42.5	2250	1.88	34.636	2.44	27.711	39.3	2.764
2097A	1.98	34.631	2.36	2.79	155.			40.4	2500	1.77	34.648	2.62	27.729	37.6	2.882
2296A	1.85	34.637	2.46	2.72	157.			39.0	2750	1.65	34.662	2.79	27.749	35.7	2.998
2497A	1.77	34.647	2.62	2.78	164.			37.7	3000	1.58	34.667	2.98	27.759	34.8	3.111
2698A	1.67	34.659	2.75	2.74	165.			36.0	3250	1.54	34.681	3.13	27.772	33.7	3.223
2898A	1.60	34.667	2.90	2.62	162.			34.9	3500	1.48	34.679	3.31	27.775	33.3	3.333
3100A	1.56	34.666	3.05	2.65	162.			34.7	3750	1.48	34.681	3.38	27.777	33.1	3.444
3298A	1.53	34.678	3.15	2.62	162.			33.6	4000	1.47	34.684	3.46	27.780	32.8	3.556
3299A	1.50	34.675	3.14	2.56	162.			33.6	4250	1.45	34.688	3.54	27.784	32.4	3.668
3498A	1.49	34.676	3.25	2.51	158.			33.5	4500	1.43	34.691	3.80	27.788	32.1	3.780
3698A	1.48	34.678	3.31	2.60	162.			33.3	4750	1.36	34.695	4.08	27.797	31.2	3.892
3898A	1.47	34.677	3.34	2.55	159.			33.3	5000	1.33	34.697	4.19	27.801	30.8	4.002
3798A	1.48	34.681	3.39	2.51	159.			33.0							
3997	1.47	34.681	3.43	2.47	156.			33.0							
4098A	1.47	34.686	3.51	2.51	154.			32.6							
4298A	1.45	34.687	3.53	2.48	151.			32.4							
4391A	1.46	34.687	3.67	2.51	151.			32.4							
4543A	1.42	34.691	3.85	2.44	147.			31.9							
4694A	1.37	34.693	4.02	2.42	136.			31.4							
4846A	1.35	34.697	4.17	2.39	134.			30.9							
4923A	1.33	34.699	4.21	2.39	133.			30.7							
4973A	1.36	34.699	4.23	2.33	133.			30.9							
4988A	1.35	34.698	4.22	2.36	133.			30.9							
4998A	1.35	34.697	4.19	2.35	133.			30.8							

RV THOMAS WASHINGTON — 7-TOW EXPEDITION LEG VI — 146

LATITUDE 19 59.5N | LONGITUDE 165 59.5W | MO/DAY/YR 6/26/70 | MESSENGER TIME 1945 0040 GMT | BOTTOM 5103M | WIND 090 | SPEED 13KT | WEATHER 1 | DOMINANT WAVES 110 4 8

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
0	26.92	34.867	4.68	0.11	1.			519.5	0	26.92	34.867	4.68	22.665	519.5	0.000
60	24.59	35.081	5.07	0.02	1.			435.1	10	26.83	34.876	4.75	22.700	516.1	0.052
90	22.90	35.094	4.90	0.06	2.			386.8	20	26.74	34.885	4.81	22.734	512.8	0.103
120	21.40	35.102	4.73	0.12	2.			342.4	30	26.46	34.916	4.88	22.848	501.9	0.154
161	19.00	34.973		0.29	3.			294.8	50	25.29	35.024	5.01	23.291	459.6	0.251
201	17.19	34.851	4.68	0.33	5.			261.2	75	23.74	35.096	5.00	23.813	409.8	0.360
251	15.19	34.450	4.78	0.46	7.			232.1	100	22.35	35.102	4.84	24.216	371.3	0.458
302	13.10	34.442	4.72	0.71	11.			206.9	125	20.97	35.090	4.73	24.589	339.8	0.548
352	10.87	34.228	5.02U	1.18	20.			180.9	150	19.59	35.015	4.71	24.900	306.2	0.629
401	9.41	34.149	3.74	1.55	30.			163.0	200	17.23	34.854	4.68	25.366	261.9	0.774
453	8.19	34.117	2.98	1.91	41.			147.2	250	15.23	34.655	4.78	25.674	232.6	0.901
502	7.19	34.099	2.59	2.23	53.			134.7	300	13.26	34.451	4.72	25.934	207.9	1.015
602	5.66	34.159	1.42	2.76	85.			111.2	400	9.43	34.151	3.75	26.403	169.5	1.209
702	5.04	34.312	1.01	2.96	94.			92.7	500	7.23	34.101	2.60	26.700	139.2	1.366
801	4.74	34.420	1.07	3.01	99.			81.4	600	5.68	34.158	1.44	26.948	111.6	1.497
896A	4.57	34.491	1.25	2.99	108.			72.2	700	5.05	34.310	1.01	27.145	93.0	1.607
899	4.40	34.490	1.23	2.97	109.			72.6	800	4.74	34.420	1.07	27.267	81.9	1.702
997	4.05								1000	4.04	34.509	1.31	27.414	67.5	1.869
1096A	3.76	34.536	1.39	3.00	121.			62.7	1200	3.48	34.551	1.51	27.503	59.1	2.015
1298A	3.25	34.560	1.62	3.01	132.			56.2	1500	2.84	34.583	1.74	27.589	50.9	2.204
1498A	2.84	34.582	1.74	2.99				51.0	1750	2.41	34.604	2.01	27.642	45.8	2.353
1698A	2.49	34.599	1.97	2.91	148.			46.8	2000	2.07	34.625	2.21	27.687	41.6	2.485
1899A	2.20	34.615	2.11	2.89	159.			43.5	2250	1.86	34.636	2.41	27.714	39.0	2.609
2098A	1.96	34.631	2.30	2.85	160.			40.5	2500	1.70	34.654	2.62	27.739	36.7	2.727
2298A	1.83	34.639	2.45	2.79	164.			38.7	2750	1.59	34.666	2.84	27.757	35.0	2.840
2498A	1.70	34.653	2.62	2.77	165.			36.7	3000	1.53	34.670	3.02	27.765	34.3	2.950
2698A	1.61	34.665	2.80	2.72	164.			35.2	3250	1.47	34.677	3.18	27.775	33.3	3.059
2898A	1.56	34.667	2.94	2.66	164.			34.7	3500	1.47	34.685	3.28	27.781	32.7	3.169
3098A	1.51	34.672	3.08	2.66	164.			33.9	3750	1.44	34.687	3.41	27.784	32.4	3.276
3298A	1.46	34.678	3.20	2.53U	164.			33.1	4000	1.43	34.688	3.48	27.784	32.4	3.366
3498A	1.47	34.679	3.25	2.51U	159.			33.1	4250	1.46	34.690	3.52	27.786	32.2	3.497
3698A	1.47	34.684	3.40U	2.62	162.			32.7	4500	1.48	34.690	3.64	27.784	32.4	3.611
3898A	1.47	34.685	3.33	2.49	160.			32.7	4750	1.49	34.694	3.80	27.790	31.9	3.725
3798A	1.46	34.686	3.41	2.54	160.			32.4	5000	1.45	34.698	4.00	27.794	31.5	3.837
3899A	1.46	34.686	3.46	2.54	159.			32.5							
4048A	1.45	34.688	3.49	2.52	159.			32.3							
4198A	1.45	34.691	3.54	2.52	158.			32.1							
4343A	1.47	34.688	3.51	2.48	156.			32.4							
4492A	1.48	34.689	3.63	2.51	154.			32.4							
4643A	1.46	34.691	3.74	2.44	151.			32.2							
4795A	1.45	34.695	3.83	2.44	147.			31.8							
4948A	1.43	34.697	3.96	2.41	145.			31.5							
5024	1.43	34.698	4.01	2.40	145.			31.4							
5076	1.44	34.699	3.97	2.37	144.			31.4							
5091	1.44	34.697	3.96	2.41	144.			31.6							
5103B	1.43	34.698	3.97	2.37	142.			31.4							

RV THOMAS WASHINGTON — 7-TOW EXPEDITION LEG VII — 148

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME GMT	BOTTOM
22 48.5N	157 11.9W	7/ 3/70	1852 0109	4490M

Z	T	S	O2	PO4	SI03	NO2	NO3
0	24.80	35.041	4.82	0.10	1.		
61	23.61	35.072	5.11	0.06	1.		
91	22.34	35.151	5.00	0.04	2.		
121	21.51	35.208	4.96	0.09	1.		
161	20.03	35.122	4.660	0.19	2.		
202	18.32	35.002	4.85	0.26	3.		
252	16.13	34.739	4.76	0.39	5.		
303	13.50	34.426	4.73	0.65	9.		
353	11.13	34.234	4.85	1.02	16.		
402	9.47	34.118	4.22	1.37	25.		
452	8.31	34.063	3.79	1.74	35.		
502	7.29	34.037	2.98	2.10	47.		
601	5.65	34.095	1.37	2.72	76.		
691A	5.03	34.274	0.56	3.15	94.		
699	5.03	34.261	0.59	3.12	93.		
797	4.77	34.399	0.66		105.		
891A	4.36	34.450	0.82	3.19	109.		
897	4.36	34.455	0.81	3.13	109.		
999	4.10	34.495	0.99	3.15	116.		
1090A	3.88	34.510	1.10	3.10	120.		
1289A	3.31	34.542	1.35	3.04	131.		
1484A	2.91	34.561	1.46		141.		
1693A	2.56	34.586	1.76	3.00	156.		
1888A	2.27	34.623	1.92	2.93	155.		
2087A	2.02	34.630	2.05	2.86	162.		
2288A	1.86	34.640	2.29	2.86	170.		
2490A	1.71	34.652	2.50	2.82	169.		
2652B	1.65	34.653	2.66	2.78	169.		
2691A	1.64	34.658	2.64	2.72	169.		
2856B	1.57	34.666	2.85	2.61	166.		
2893A	1.58	34.669	2.83	2.72	167.		
3008B	1.53	34.668	2.91	2.67	167.		
3094A	1.52	34.670	2.97	2.65	167.		
3162B	1.50	34.674	3.09	2.58	167.		
3294A	1.48	34.679	3.17	2.69	165.		
3563D	1.47	34.674	3.19		159.		
3513D	1.46	34.678	3.27	2.66	160.		
3765D	1.45	34.681	3.34	2.48	160.		
3911D	1.46	34.682	3.45	2.57	159.		
4059D	1.46	34.686	3.48	2.49	157.		
4204D	1.46	34.702 U	3.50	2.49	156.		
4349D	1.48	34.696	3.54	2.57	153.		
4420B	1.48	34.692	3.57	2.48	153.		

DT	Z	T	S	O2	SIGT	DT	DD
444.1	0	24.80	35.041	4.82	23.454	444.1	0.000
408.0	10	24.73	35.037	4.87	23.471	442.4	0.044
367.5	20	24.62	35.036	4.92	23.506	439.1	0.088
341.3	30	24.45	35.038	4.96	23.558	434.1	0.132
309.4	50	23.96	35.055	5.06	23.715	419.1	0.218
276.4	75	23.02	35.106	5.06	24.029	389.2	0.320
245.7	100	22.08	35.175	4.98	24.348	358.8	0.414
214.3	125	21.38	35.204	4.96	24.566	338.0	0.502
184.9	150	20.47	35.156	4.92	24.775	318.0	0.585
166.2	200	18.41	35.009	4.85	25.197	277.9	0.737
152.9	250	16.22	34.751	4.76	25.524	246.8	0.872
140.7	300	13.66	34.444	4.75	25.847	216.1	0.992
115.9	400	9.53	34.123	4.25	26.367	166.8	1.191
95.5	500	7.33	34.039	3.02	26.638	141.1	1.353
96.4	600	5.66	34.095	1.38	26.901	116.1	1.490
83.3	700	5.03	34.264	0.59	27.410	96.4	1.603
75.1	800	4.75	34.396	0.67	27.247	82.9	1.701
74.9	1000	4.10	34.496	0.99	27.397	69.1	1.871
69.1	1200	3.56	34.527	1.25	27.476	61.5	2.021
65.9	1500	2.89	34.583	1.48	27.583	51.4	2.219
58.1	1750	2.47	34.598	1.81	27.632	46.8	2.366
51.6	2000	2.12	34.630	1.99	27.687	41.6	2.501
48.3	2250	1.89	34.639	2.24	27.712	39.2	2.625
43.2	2500	1.71	34.650	2.52	27.735	36.8	2.743
40.8	2750	1.61	34.666	2.70	27.755	35.4	2.857
38.8	3000	1.53	34.669	2.90	27.763	34.4	2.968
36.8	3250	1.49	34.680	3.16	27.775	33.3	3.078
36.3	3500	1.46	34.677	3.26	27.775	33.2	3.187
35.9	3750	1.45	34.682	3.34	27.779	32.9	3.297
34.8	4000	1.46	34.685	3.47	27.782	32.7	3.408
34.6	4250	1.47	34.693	3.51	27.787	32.1	3.519
34.4							
34.2							
33.7							
33.2							
33.5							
33.1							
32.8							
32.8							
32.5							
31.9							
32.2							

RV THOMAS WASHINGTON — 7-TOW EXPEDITION LEG VII — 151

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER TIME GMT	BOTTOM
30 01.3N	156 12.8W	7/ 6/70	1346 1805	

Z	T	S	O2	PO4	SI03	NO2	NO3
0	23.55	35.263	4.98	0.10	0.		
25	23.55	35.265	5.06	0.06	0.		
50	19.11	34.863	5.74	0.10	2.		
101	14.72	34.505	5.94	0.21	5.		
152	13.76	34.467	5.23	0.49	5.		
201	12.72	34.365	5.35	0.61	6.		
250	11.80	34.296	4.77	0.96	11.		
298	10.78	34.231	4.46	1.04	14.		
346	9.89	34.163	4.82	1.26	20.		
594D	5.80	33.993	2.81	2.43	65.		
840D	4.62	34.053	1.56	2.99	86.		
794D	4.17	34.203	0.43	3.13	108.		
805D	3.85	34.301	0.35	3.37	121.		
995D	3.57	34.389	0.43	3.30	129.		
1195D	3.19	34.496	0.70	3.110	138.		
1396D	2.79	34.538	1.10	3.27	147.		
1596D	2.47	34.575	1.47	3.41	151.		
1795D	2.22	34.588	1.76	3.17	156.		
1988D	2.00	34.631	2.00	3.14	160.		
2160A	1.89	34.622	2.08	3.07	166.		
2189D	1.87	34.628	2.13	3.190	165.		
2350A	1.77		2.24	3.01	166.		
2385D	1.75	34.699 U	2.28		168.		
2549D	1.70	34.650	2.39	2.810	171.		
2744D	1.62	34.669	2.57	2.93	169.		
2933A	1.58	34.660	2.76	2.83	165.		
3130A	1.54	34.675	2.92	2.81	160.		
3318A	1.51	34.670	3.05	2.81	161.		
3514D	1.49	34.683	3.17	2.77	158.		

DT	Z	T	S	O2	SIGT	DT	DD
392.6	0	23.55	35.263	4.98	23.993	392.6	0.000
392.4	10	23.55	35.263	5.01	23.994	392.5	0.039
305.5	20	23.55	35.264	5.04	23.994	392.5	0.079
232.9	30	22.78	35.182	5.19	24.155	377.2	0.117
216.4	50	19.11	34.863	5.74	24.908	305.5	0.186
203.9	75	16.35	34.643	5.84	25.411	257.6	0.257
192.0	100	14.76	34.510	5.94	25.666	233.4	0.319
179.2	125	14.06	34.481	5.61	25.792	221.4	0.376
169.5	150	13.77	34.468	5.26	25.844	216.5	0.432
125.3	200	12.79	34.368	5.35	25.974	204.1	0.539
107.7	250	11.80	34.298	4.77	26.102	192.0	0.641
91.8	300	10.74	34.229	4.86	26.241	178.7	0.737
81.3	400	8.89	34.091	4.58	26.444	159.5	0.913
72.0	500	7.20	34.012	3.84	26.634	141.5	1.071
60.1	600	5.72	33.995	2.74	26.816	124.2	1.212
53.9	700	4.58	34.063	1.48	27.002	106.6	1.334
48.4	800	4.15	34.211	0.43	27.166	91.1	1.440
45.5	1000	3.56	34.393	0.44	27.370	71.6	1.618
40.6	1200	3.14	34.498	0.71	27.493	59.9	1.766
40.4	1500	2.62	34.559	1.30	27.590	50.8	1.904
39.8	1750	2.27	34.586	1.70	27.639	46.1	2.101
	2000	1.99	34.631	2.00	27.698	40.5	2.232
	2250	1.83	34.634	2.18	27.713	39.1	2.354
36.9	2500	1.71	34.649	2.36	27.734	37.1	2.472
34.9	2750	1.62	34.669	2.58	27.757	34.9	2.585
35.4	3000	1.57	34.666	2.82	27.758	34.9	2.697
33.9	3250	1.52	34.673	3.01	27.767	34.0	2.808
34.1	3500	1.49	34.683	3.16	27.778	33.1	2.919
33.0							

LATITUDE 30 01.1N LONGITUDE 156 12.8W MO/DAY/YR 7/10/70 MESSENGER TIME 0841 0141 GMT BOTTOM WIND SPEED WEATHER DOMINANT WAVES

Z	T	S	O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DC
0	23.86	35.254	4.96	0.07	3.			401.9	0	23.86	35.254	4.96	23.895	401.9	0.000
25	23.71	35.258	5.11	0.01	2.			397.4	10	23.80	35.255	5.02	23.914	400.1	0.040
50	18.81	34.826	5.73	0.06	4.			300.9	20	23.74	35.257	5.08	23.933	398.3	0.080
100	15.01	34.584	5.29	0.28	6.			233.1	30	22.64	35.164	5.24	24.124	380.1	0.119
150	13.35	34.575	5.40	0.39	7.			215.1	50	18.81	34.826	5.73	24.956	300.9	0.186
201	12.50	34.356	5.08	0.66	10.			200.4	75	16.28	34.677	5.62	25.454	253.5	0.257
251	11.58	34.309	4.88	0.86	14.			187.2	100	15.01	34.584	5.29	25.668	233.1	0.319
300	10.79	34.219	4.85	1.04	18.			180.2	125	14.00	34.471	5.34	25.798	220.8	0.376
350	9.92	34.176	4.78	1.23	23.			169.1	150	13.35	34.375	5.40	25.858	215.1	0.432
399	9.17	34.126	4.47	1.36	27.			161.6	200	12.51	34.356	5.09	26.010	200.7	0.538
449	8.17	34.058	4.23	1.56	37.			151.2	250	11.60	34.311	4.88	26.149	187.5	0.638
498	7.17	34.025	3.47	1.82	46.			140.0	300	10.79	34.219	4.85	26.226	180.2	0.733
596	5.43	33.995	2.53	2.34	72.			120.8	400	9.15	34.125	4.47	26.430	160.6	0.911
695	4.48	34.071	1.35	2.66	97.			104.9	500	7.13	34.02*	3.45	26.654	139.*	1.068
794	4.04	34.178	0.61	3.07	116.			92.4	600	5.38	33.99*	2.48	26.859	120.1	1.206
894	3.81	34.300	0.33	3.29	127.			81.0	700	4.45	34.077	1.30	27.027	104.2	1.325
979A	3.55	34.383	0.34	3.27	133.			72.5	800	4.04	34.187	0.58	27.159	91.7	1.429
994	3.56	34.374	0.34	3.29	137.			73.1	1000	3.55	34.377	0.35	27.358	72.5	1.604
1045	3.44	34.442	0.41	3.22	139.			66.8	1200	3.14	34.482	0.71	27.481	61.2	1.758
1089	3.33	34.431	0.48	3.22	142.			66.6	1500	2.67	34.558	1.33	27.583	51.4	1.953
1139	3.25	34.454	0.61	3.22	143.			64.2	1750	2.31	34.597	1.69	27.645	45.6	2.097
1176A	3.16	34.478	0.65	3.19	145.			61.6	2000	2.03	34.618	1.92	27.684	41.8	2.229
1191	3.15	34.479	0.69	3.27	145.			61.4	2250	1.83	34.637	2.10	27.715	39.0	2.352
1373A	2.81	34.534	1.09	3.14	153.			54.*	2500	1.72	34.661	2.31	27.744	36.3	2.469
1572P	2.60	34.568	1.45	3.04	155.			50.0	2750	1.65	34.658	2.56	27.748	35.9	2.583
1770P	2.28	34.599	1.71	3.04	163.			45.1	3000	1.57	34.664	2.80	27.757	34.7	2.696
1970P	2.06	34.614	1.89	2.87U	168.			42.3	3250	1.52	34.674	2.98	27.768	33.9	2.807
2174P	1.88	34.633	2.06	3.03	171.			39.9	3500	1.50	34.681	3.13	27.775	33.3	2.918
2368P	1.77	34.641	2.18	2.84U	174.			38.1	3750	1.48	34.683	3.23	27.779	32.9	3.028
2573P	1.69	34.668	2.39	2.94	175.			35.5	4000	1.48	34.694	3.34	27.788	32.0	3.139
2767P	1.62	34.656	2.58	2.89	177.			35.9	4250	1.47	34.690	3.44	27.783	32.5	3.251
2961P	1.57	34.694 U	2.77	2.70	175.				4500	1.50	34.693	3.52	27.785	32.3	3.365
2974P	1.57	34.662	2.78	2.74	172.			35.1	4750	1.51	34.698	3.57	27.786	32.2	3.481
3069P	1.56	34.679	2.86	2.93U	172.			33.7	5000	1.53	34.699	3.65	27.788	32.0	3.598
3156P	1.55	34.676	2.88	2.62	171.			33.*	5250	1.56	34.699	3.75	27.786	32.3	3.718
3170P	1.55	34.670	2.92	2.72	172.			34.*	5500	1.59	34.694	3.69	27.779	32.9	3.841
3270P	1.52	34.674	2.99	2.77	169.			33.6	5750	1.64	34.699	3.71	27.781	32.7	3.967
3353P	1.51	34.679	3.06	2.69	171.			33.4							
3548P	1.50	34.680	3.14	2.63	169.			33.3							
3744P	1.48	34.682	3.46U	2.65	166.			33.0							
3940P	1.47	34.696	3.31	2.56	166.			31.4							
4136P	1.49	34.687	3.40	2.60	166.			32.7							
4330P	1.49	34.691	3.46	2.61	166.			32.4							
4526P	1.50	34.718 U	3.53	2.60	162.										
4722P	1.51	34.695	3.57	2.61	160.			32.2							
4920P	1.52	34.697	3.60	2.53	159.			32.1							
5117P	1.54	34.701	3.73	2.54	155.			31.9							
5315P	1.57	34.710 U	3.76	2.56	158.										
5513P	1.59	34.693	3.69	2.52	156.			32.9							
5711P	1.61	34.698	3.71	2.54	155.			32.7							
5810P	1.62	34.698	3.72	2.56	155.			32.7							
5859P	1.63	34.694	3.68	2.50	155.			33.1							
5909P	1.63	34.712 U	3.71		154.										

LATITUDE 40 01.1N | LONGITUDE 164 47.3W | MO/DAY/YR 7/14/70 | MESSENGER TIME 0605 1451 GMT | BOTTOM | WIND SPEED | WEATHER | DOMINANT WAVES

Z	T	S	O2	PO4	SiO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD
0	15,88	33,972	5.99	0.21	1.			296.3	0	15.88	33.972	5.99	25.005	296.3	0.000
102	10,22	34,196	6.13	0.81	14.			172.4	10	15.13	33.991	6.01	25.185	279.1	0.029
208	8,96	34,050	6.11	0.98	18.			163.4	20	14.43	34.013	6.03	25.354	263.1	0.056
303	8,26	34,029	5.49	1.27	27.			155.1	30	13.76	34.036	6.05	25.511	248.1	0.082
358	7,45	33,986	4.78	1.60	37.			146.6	50	12.56	34.087	6.08	25.792	221.5	0.129
403	6,79	34,006	4.06	1.89	48.			136.4	75	11.29	34.147	6.11	26.078	194.2	0.181
454	6,15	33,976	3.50	2.24	57.			130.7	100	10.29	34.194	6.13	26.293	173.8	0.227
503	5,54	34,002	2.96	2.39	69.			121.6	125	9.95	34.163	6.13	26.328	170.5	0.271
554	5,07	33,997	2.43	2.57	80.			116.7	150	9.65	34.128	6.12	26.350	168.4	0.314
608	4,63	34,043	1.99	2.81	90.			108.5	200	9.06	34.061	6.11	26.395	164.1	0.399
703	4,17	34,109	1.46	2.82U	105.			98.9	250	8.68	34.038	5.92	26.456	160.3	0.482
807	3,79	34,198	0.83	3.09	114.			88.5	300	8.29	34.026	5.52	26.487	155.4	0.564
901	3,52	34,269	0.69	3.09	131.			80.6	400	6.83	34.006	4.11	26.680	137.1	0.715
956	3,39	34,286	0.61	3.19	138.			78.1	500	5.58	34.001	2.99	26.838	122.1	0.851
994A	3,29	34,315	0.53	3.25	143.			75.0	600	4.69	34.036	2.05	26.968	109.8	0.973
1005	3,28	34,321	0.52		140.			74.5	700	4.18	34.108	1.47	27.080	99.1	1.084
1049	3,18	34,345	0.47	3.25	143.			71.8	800	3.81	34.193	0.87	27.185	89.1	1.184
1099	3,09	34,355	0.45	3.22	146.			70.3	1000	3.28	34.329	0.52	27.345	74.7	1.362
1193A	2,84	34,404	0.42	3.32	159.			64.4	1200	2.83	34.407	0.42	27.450	64.1	1.515
1392A	2,54	34,466	0.44	3.29	169.			57.2	1500	2.41	34.496	0.50	27.557	53.9	1.715
1497A	2,41	34,496	0.50	3.19	171.			53.9	1750	2.14	34.547	0.75	27.618	48.1	1.863
1591A	2,31	34,508	0.58	3.20	171.			52.2	2000	1.96	34.614	1.18	27.686	41.7	1.996
1791A	2,12	34,559	0.81	3.28	179.			46.9	2250	1.81	34.622	1.52	27.705	39.9	2.120
1990A	1,97	34,612	1.17	3.15	184.			41.6	2500	1.69	34.646	1.98	27.733	37.3	2.239
2189A	1,84	34,611	1.42	3.07	184.			40.9	2750	1.60	34.651	2.40	27.744	36.2	2.354
2389A	1,74	34,643	1.78	2.91	184.			37.7	3000	1.54	34.682	2.67	27.773	33.4	2.465
2589A	1,66	34,644	2.13	2.92	178.			37.1	3250	1.50	34.674	2.88	27.770	33.8	2.574
2770B	1,59	34,651	2.43	2.77	178.			36.1	3500	1.47	34.689	3.13	27.784	32.4	2.683
2790A	1,60								3750	1.46	34.692	3.25	27.787	32.1	2.791
2971B	1,56	34,658	2.61	2.71	176.			35.3	4000	1.48	34.698	3.34	27.791	31.8	2.900
2992A	1,54	34,682	2.66	2.72	176.			33.4	4250	1.48	34.698	3.40	27.791	31.8	3.011
3093A	1,54	34,675	2.78	2.88U	176.			34.1	4500	1.50	34.690	3.42	27.782	32.6	3.125
3170B	1,52	34,667	2.86	2.72	175.			34.4	4750	1.53	34.691	3.40	27.781	32.7	3.242
3189A	1,51	34,673	2.85	2.77	171.			33.9	5000	1.57	34.691	3.36	27.778	33.0	3.362
3398A	1,49	34,675	3.02	2.63	170.			33.6	5250	1.61	34.689	3.42	27.774	33.4	3.485
3568F	1,46	34,696	3.18	2.62	170.			31.8	5500	1.63	34.689	3.44	27.772	33.5	3.612
3767B	1,46	34,691	3.25	2.56	170.			32.2							
3966B	1,48														
4164B	1,47	34,700	3.39	2.69	170.			31.5							
4361F	1,49														
4560B	1,51	34,687	3.42	2.64	173.			32.8							
4757B	1,53	34,690	3.40	2.57	171.			32.7							
4954B	1,57	34,691	3.35	2.57	171.			32.9							
5151B	1,59	34,708 U	3.41	2.53	171.										
5349B	1,62	34,688	3.43	2.57	171.			33.5							
5545B	1,65	34,688	3.44	2.59	171.			33.6							
5644B	1,66	34,691	3.48	2.66	171.			33.5							
5693B	1,67	34,686	3.38	2.62	171.			34.0							
5742B	1,67														

RV THOMAS WASHINGTON 7-TOW EXPEDITION LEG VII 173

LATITUDE 44 49.6N LONGITUDE 167 09.0W MO/DAY/YR 7/17/70 MESSENGER TIME 1708 0124 GMT BOTTOM WIND SPEED WEATHER DOMINANT WAVES

Z	T	S		O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DE
0	10.27	33.237		6.61	1.06	25.			244.2	0	10.27	33.237	6.61	25.553	244.2	0.000
25	10.23	33.238		6.64	1.11	24.			243.4	10	10.25	33.240	6.62	25.556	243.9	0.024
49	8.09	33.477		7.20	1.15	24.			193.3	20	10.24	33.240	6.63	25.559	243.6	0.049
80	6.88	33.551		7.00	1.19	24.			171.6	30	9.83	33.283	6.76	25.662	233.8	0.073
119	6.62	33.662		6.70	1.22	25.			160.0	50	8.03	33.483	7.19	26.100	192.2	0.115
161	6.44	33.713		6.60	1.29	26.			153.9	75	6.99	33.551	7.03	26.301	173.1	0.161
201	6.75	33.845		5.87	1.43	32.			147.9	100	6.75	33.629	6.84	26.395	164.2	0.204
251	6.16	33.867		5.16	2.13	42.			139.0	125	6.58	33.670	6.69	26.450	158.9	0.245
300	5.53	33.903		3.99	2.52	55.			128.9	150	6.46	33.700	6.63	26.490	155.2	0.284
351	4.96	33.927		3.15	2.60	69.			120.7	200	6.74	33.843	5.89	26.564	148.1	0.361
400	4.73	33.942		2.73	2.86	77.			117.2	250	6.18	33.869	5.18	26.658	139.2	0.435
451	4.46	34.012		2.08	2.91	87.			109.1	300	5.55	33.903	3.99	26.767	126.9	0.503
501	4.25	34.033		1.86	2.99	93.			105.4	400	4.73	33.942	2.73	26.890	117.2	0.630
600	3.94	34.113		1.33	3.14	108.			96.3	500	4.25	34.034	1.86	27.014	105.4	0.746
699	3.64	34.235		0.94	3.30	122.			84.3	600	3.94	34.113	1.33	27.110	96.3	0.852
797	3.39	34.260		0.75	3.31	131.			80.1	700	3.64	34.236	0.94	27.237	84.2	0.947
900	3.20	34.325		0.64	3.34	141.			73.5	800	3.38	34.262	0.75	27.283	79.9	1.035
992A	3.05	34.354		0.60	3.32	146.			70.0	1000	3.04	34.357	0.60	27.391	69.7	1.197
1099	2.87	34.388		0.59	3.35	151.			65.9	1200	2.73	34.425	0.62	27.473	62.0	1.343
1192A	2.74	34.422		0.62	3.34	167.			62.2	1500	2.37	34.506	0.70	27.568	52.9	1.538
1391A	2.50	34.467		0.56	3.43	163.			56.8	1750	2.13	34.554	1.03	27.626	47.5	1.683
1591A	2.27	34.534		0.85	3.41	170.			50.0	2000	1.97	34.597	1.31	27.672	43.0	1.817
1790A	2.10	34.556		1.07	3.14	176.			47.0	2250	1.83	34.626	1.64	27.707	39.8	1.943
1991A	1.98	34.594		1.30	3.20	176.			43.2	2500	1.73	34.639	2.00	27.725	38.1	2.063
2191A	1.86	34.628		1.56	3.00	177.			39.7	2750	1.64	34.660	2.36	27.749	35.8	2.179
2392A	1.77	34.619		1.85	3.04	177.			39.8	3000	1.58	34.680	2.59	27.769	33.8	2.290
2593A	1.69	34.655		2.13	3.01	177.			36.5	3250	1.53	34.673	2.87	27.767	34.0	2.401
2789B	1.63	34.661		2.42	2.88	170.			35.6	3500	1.51	34.673	3.11	27.769	33.9	2.513
2793A	1.63	34.644		2.36	3.01U	173.			36.9	3750	1.49	34.674	3.28	27.770	33.7	2.626
2984B	1.60	34.653		2.60	2.76	171.			36.0	4000	1.48	34.675	3.37	27.772	33.6	2.740
2994A	1.58	34.680		2.59	2.94U	169.			33.8	4250	1.49	34.678	3.31	27.774	33.4	2.855
3195A	1.53	34.672		2.80	2.84U	169.			34.1	4500	1.49	34.684	3.38	27.779	32.8	2.971
3207B	1.53									4750	1.53	34.688	3.48	27.779	32.9	3.088
3404B	1.51									5000	1.56	34.688	3.50	27.776	33.2	3.209
3817A	1.49									5250	1.59	34.690	3.45	27.776	33.2	3.332
4024A	1.48	34.707	U	3.37	2.74	166.				5500	1.63	34.692	3.52	27.775	33.2	3.457
4235B	1.49	34.677		3.31	2.75	167.			33.4	5750	1.66	34.698	3.43	27.778	33.0	3.586
4440B	1.48															
4651B	1.51	34.689		3.42	2.62	168.			32.6							
4866B	1.55	34.686		3.54	2.63	168.			33.2							
5081B	1.57	34.708	U	3.47	2.68	169.										
5303B	1.60	34.706	U	3.44	2.68	166.										
5527B	1.63	34.692		3.53	2.71	172.			33.2							
5641B	1.66	34.690		3.51	2.76	175.			33.6							
5702B	1.67	34.686		3.47	2.67	171.			34.0							
5757B	1.66	34.698		3.43		172.			33.0							

RV THOMAS WASHINGTON 7-TOW EXPEDITION LEG VII 174

LATITUDE 50 55.7N LONGITUDE 179 31.4W MO/DAY/YR 7/21/70 MESSENGER TIME 0910 1642 GMT BOTTOM WIND SPEED WEATHER DOMINANT WAVES

Z	T	S		O2	PO4	SIO3	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DE
0	7.82	32.613		7.22	0.88	16.			253.9	0	7.82	32.613	7.22	25.451	253.9	0.000
26	7.48	32.612		7.20	1.02	17.			249.4	10	7.69	32.615	7.21	25.469	252.2	0.025
52	6.24	32.944		7.03	1.69	37.			187.2	20	7.56	32.615	7.20	25.487	250.5	0.050
102	3.51	33.270		6.15	1.97	52.			155.8	30	7.01	32.650	7.19	25.590	240.7	0.075
152	3.78	33.600		3.72	2.47	60.			133.4	50	4.51	32.912	7.05	26.097	192.5	0.118
202	3.47	33.768		2.84	2.73	84.			117.9	75	3.90	33.198	6.77	26.386	165.0	0.164
250	3.74	33.878		1.49	3.00	92.			112.1	100	3.54	33.275	6.21	26.482	155.9	0.206
299	3.75	33.949		0.96	3.13	105.			106.9	125	3.61	33.433	5.03	26.602	144.5	0.249
397	3.70	34.105		0.60	3.12	118.			94.6	150	3.77	33.590	3.82	26.711	134.2	0.279
494	3.41	34.151		0.74	3.12	128.			88.5	200	3.48	33.765	2.87	26.877	118.4	0.342
591	3.30	34.209		0.62	3.09	137.			83.1	250	3.74	33.878	1.49	26.944	112.1	0.401
686	3.14	34.273		0.55	3.07	145.			76.9	300	3.75	33.952	0.95	27.000	106.7	0.457
782	3.03	34.325		0.56	2.99	146.			72.0	400	3.69	34.108	0.60	27.130	94.4	0.560
876	2.91	34.356		0.44	2.92	155.			68.6	500	3.40	34.155	0.74	27.196	88.2	0.655
971	2.75	34.407		0.55	2.92	160.			63.4	600	3.28	34.216	0.61	27.255	82.5	0.744
1161	2.53	34.462		0.67	3.13	165.			57.6	700	3.12	34.282	0.55	27.323	76.1	0.828
1351	2.34	34.486		0.76	3.13	171.			54.1	800	3.01	34.332	0.53	27.373	71.4	0.907
1397A	2.32	34.499		0.79	3.24	177.			53.0	1000	2.71	34.419	0.57	27.469	62.2	1.052
1647A	2.10	34.524		0.77	3.33	177.			49.4	1200	2.48	34.467	0.69	27.527	56.8	1.185
1897A	1.98	34.583		1.37	3.11	178.			44.0	1500	2.23	34.512	0.78	27.584	51.4	1.366
2147A	1.80	34.608		1.77	3.07	181.			40.8	1750	2.05	34.549	0.99	27.628	47.2	1.508
2399A	1.71	34.629		2.29	2.90	181.			38.6	2000	1.90	34.597	1.54	27.677	42.5	1.648
2652A	1.63	34.657		2.66	2.99	180.			35.9	2250	1.76	34.617	1.98	27.705	39.9	1.784
2905A	1.57	34.659		2.79	2.89	182.			35.3	2500	1.68	34.641	2.46	27.750	37.4	1.883
3158A	1.55	34.667		3.05	2.79	182.			34.6	2750	1.60	34.658	2.72	27.750	35.6	1.997
3410A	1.51	34.696	U	3.22	2.79	170.				3000	1.56	34.663	2.88	27.756	35.1	2.110
3661A	1.48	34.680		3.38	2.74	168.			35.1	3250	1.54	34.670	3.10	27.764	34.2	2.222
3915A	1.47	34.677		3.48	2.73	168.			33.3	3500	1.50	34.676	3.28	27.772	33.5	2.334
4166A	1.48			3.44	2.73	168.				3750	1.48	34.680	3.43	27.776	33.2	2.445
4418A	1.48	34.697		3.59	2.60U	163.			31.8	4000	1.47	34.681	3.46	27.778	33.0	2.557
4423B	1.48	34.704		3.51	2.78	167.			31.3	4250	1.48	34.691	3.49	27.785	32.3	2.670
4666A	1.50	34.703		3.55	2.71	163.			31.5	4500	1.49	34.704	3.52	27.795	31.4	2.785
4672B	1.50	34.683		3.59	2.70	162.			33.0	4750	1.50	34.698	3.62	27.781	32.7	2.900
4921A	1.51	34.697		3.48	2.71	162.			32.0	5000	1.51	34.696	3.69	27.786	32.1	3.015
5169A	1.52	34.706	U	3.70	2.71	161.				5250	1.53	34.690	3.68	27.781	32.5	3.134
5448A	1.56	34.687		3.62	2.69	160.			33.1	5500	1.57	34.688	3.59	27.774	33.0	3.254
5697A	1.60	34.677	U	3.52	2.72	159.				5750	1.61	34.690	3.56	27.775	33.3	3.369
5946A	1.64	34.705	U	3.70	2.71	159.				6000	1.65	34.690	3.60	27.775	33.3	3.488
6193A	1.68	34.693		3.59	2.72	154.			33.5	6250	1.69	34.694	3.61	27.775	33.1	3.600
6443A	1.71	34.710	U	3.64	2.62	157.				6500	1.72	34.695	3.64	27.778	33.0	3.714
6704A		34.692		3.72	2.70	157.				6750	1.76	34.691	3.72	27.784	32....	3.828
6952A	1.79	34.690		3.70	2.63	157.			34.5	7000	1.80	34.691	3.71	27.781	32.7	3....
7153A	1.83	34.713	U	3.73	2.67	157.				7250	1.85	34....	3.7...	27....	32....	4....
7205A	1.83	34.689		3.65	2.62	157.			34.9							
7253A	1.84	34.689		3.74	2.57	157.			34....							

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