80009rpt

CRUISE REPORT

R/V OCEANUS

May 23 - June 1, 1980

Brad Butman
U.S. Geological Survey
Woods Hole, MA 02543

Vessel: OCEANUS

Cruise No.: 81

Dates of Operation: 1130 May 23 - 1450 June 1, 1980, Woods Hole to Woods Hole

Area of Operation: Atlantic continental shelf (Georges Bank to New Jersey shelf)

Personnel:

Paul Howland, Master	Brad Butman, Chief Scientist, USGS
Mike Bothner, USGS	Marlene Noble, USGS
Cindy Bryden, USGS	Carol Parmenter, USGS
Fred Grassle, WHOI	Linda Porteous, WHOI
John Larson, USGS	Rick Rendigs, USGS
Gerry McCarthy, USGS	Dave Twichell, USGS
Frank Musialowski, USGS	

Objectives:

The objectives of the cruise were to:

1. Recover 5 tripods and 4 current moorings
2. Deploy 3 tripod and 3 current moorings
3. Conduct hydrographic measurements (CTD and XBT) along several transects
4. Recover and replace surface marker buoys
5. Obtain box cores at 3 locations and surface grab samples at all tripod locations
6. Deploy 2 surface buoys and conduct a preliminary sidescan survey in an area of sandwaves on Georges Bank (initiates longterm sandwave study)
7. Conduct hydrographic and suspended sediment transects in Lydonia and Oceanographer canyons
8. Supplement bathymetric data around head of Oceanographer Canyon, and in Lydonia Canyon
9. Conduct sidescan survey at head of Lydonia Canyon

Equipment:

Northstar Loran 6000 with cassette recording
Gift echosounder
Klein Sidescan Sonar
XBT
Neil Brown Inst. Systems CTD (FM tape recorder)
Box Corer
Smith MacIntyre Grab Sampler
Van Veen Grab
Gravity Corer

Narrative:

May 23	1130	Depart Woods Hole
	1355	Start XBT-CTD transect across shelf
	~ 2100	Arrive station Q
	2130	Recover subsurface current mooring (mooring 191)
	2300	Recover tripod (mooring 186)
May 24	0045	Deploy tripod (mooring 194)
	0130	Start sidescan search for lost surface mooring
	0330	Complete sidescan search - located
	0430	Box core preparations
	0500 - 1200	Box core at station (4 cores obtained, Samples 4755-4758)
	1320	Deploy subsurface current mooring (mooring 197)
	1330	Take piston core (sample 4759)
	~ 1345	Underway to complete cross-shelf transect
	2000	Complete cross-shelf transect. Underway to mid-Atlantic Station B
May 25	~ 1000	Arrived at Station B
	1030	Recovered subsurface current mooring (mooring 192)
	1120	Recovered tripod(mooring 187)
	1300	Deployed surface Buoy F (Surface part at current mooring 189)
	1330	Deployed surface Buoy T
	1440	Recovered surface Buoy S (surface part of current mooring 192)
	1517	Reset surface Buoy S
	1630	Deployed surface Buoy A
	1745	Deployed tripod (mooring 195)
	1906	Deployed subsurface current mooring (mooring 198)
	2100	Start sidescan survey for lost surface buoy (current mooring 180)
	2300	Complete sidescan search
	2300	Grab sample (sample # 4760)
	2315	Underway to start CTD transect

May 26 0100 Start cross-shelf hydrographic section

0800 Complete transect
Head for Georges Bank

May 27 0530 Start hydrographic transect of Great South Channel

0730 Arrive Station R

0815 Recover subsurface current mooring (mooring 190)

0900 Recover tripod (mooring 185)
Recover surface Buoy C
Recover surface Buoy I

1146 Grab sample (sample # 4761)

1215 Underway to station N

1400 Arrive station N

1600 Recover tripod (mooring 184)

1640 Recover subsurface current mooring (mooring 189)

1720 Recover surface Buoy K

1805 Grab samples (samples 4762, 4763)

1900-7230 Sidescan survey

2300 Recovered surface Buoy D

May 28 0000 Start hydrographic transect, Great South Channel

1100 Arrive sandwave study area

1130 Start sidescan survey

1600 Deploy Buoys D, I
Deploy experimental sidescan reference marker
Sidescan survey to look for major bedforms

1930 Underway

2140 Start cross-shelf hydrographic transect across south flank of Georges Bank

May 29 0430 Complete cross-shelf hydro transect

0745 Arrive Station K

815-1100 Box core and grab sample at Station K (4764-4766)

1130 Recover tripod (mooring 183)

May 29	1255	Recover Buoy B
	1330	Recover Buoy E
	1455	Reset Buoy E,B
	1540	Deploy surface Buoy C (surface component mooring 196)
	1645	Reset Buoy E
	1730	Deploy tripod (mooring 195) (waited to deploy subsurface component of mooring 196 due to VACM-TR failure)
	1800-2030	Sidescan survey
	2045	Underway to Lydonia Canyon
May 30	0000-1200	Lydonia Canyon hydrographic transect (adjacent slope and canyon)
	1400	Arrive Station A Box core and surface grab samples (4767-4768)
	1540	Complete sampling
	1700	Arrive Station K (Current mooring repaired)
	1730	Deploy subsurface current mooring (Mooring 196) Underway to Lydonia Canyon (lookout!)
	2100	Start bathymetric survey of Lydonia Canyon
May 31	0400	End bathymetric survey
	0500	Box core (sample 4769)
	0630	Start sidescan survey at head of Lydonia Canyon (Numerous lobster pots)
	1000	Complete sidescan survey
	1200	Start sidescan survey, Oceanus Canyon
	1500	Start hydrographic transect, Oceanographer Canyon
	1900	Box core, Oceanographer Canyon (sample 4770)
	2230	Box core, slope (sample 4772)
June 1	0400	Complete hydrography Underway to Woods Hole
	1400	Arrive Woods Hole

Tabulated information

Moorings Deployed: 6

Station	Latitude	Longitude	Number	Type
Q	40 29.6	70 12.1	197	Current, surface and subsurface
Q	40 29.7	70 12.2	194	Tripod
B	38 42.5	73 38.8	193	Tripod
B	38 42.6	73 38.6	198	Current, surface and subsurface
K	41 02.1	67 33.9	195	Tripod
K	41 02.0	67 34.0	196	Current, surface and subsurface

Moorings Recovered: 9

Station	Latitude	Longitude	Number	Type
Q	40 29.7	70 12.2	186	Tripod
Q	40 29.7	70 12.2	191	Subsurface
B	38 42.4	73 39.3	187	Tripod
B	38 42.4	73 38.9	192	Subsurface/surface
R	40 29.9	69 06.9	185	Tripod
R	40 29.9	69 07.2	190	Subsurface
N	40 51.3	69 01.2	184	Tripod
N	40 51.1	69 01.1	189	Subsurface
K	40 02.3	67 33.4	183	Tripod

Days at Sea: 10

CTD Stations: 43

XBT'S : 49

Surface Salinity: 93

Navigation Loran C: 4 tapes

Samples: 10 Box Cores
6 Grab Samples

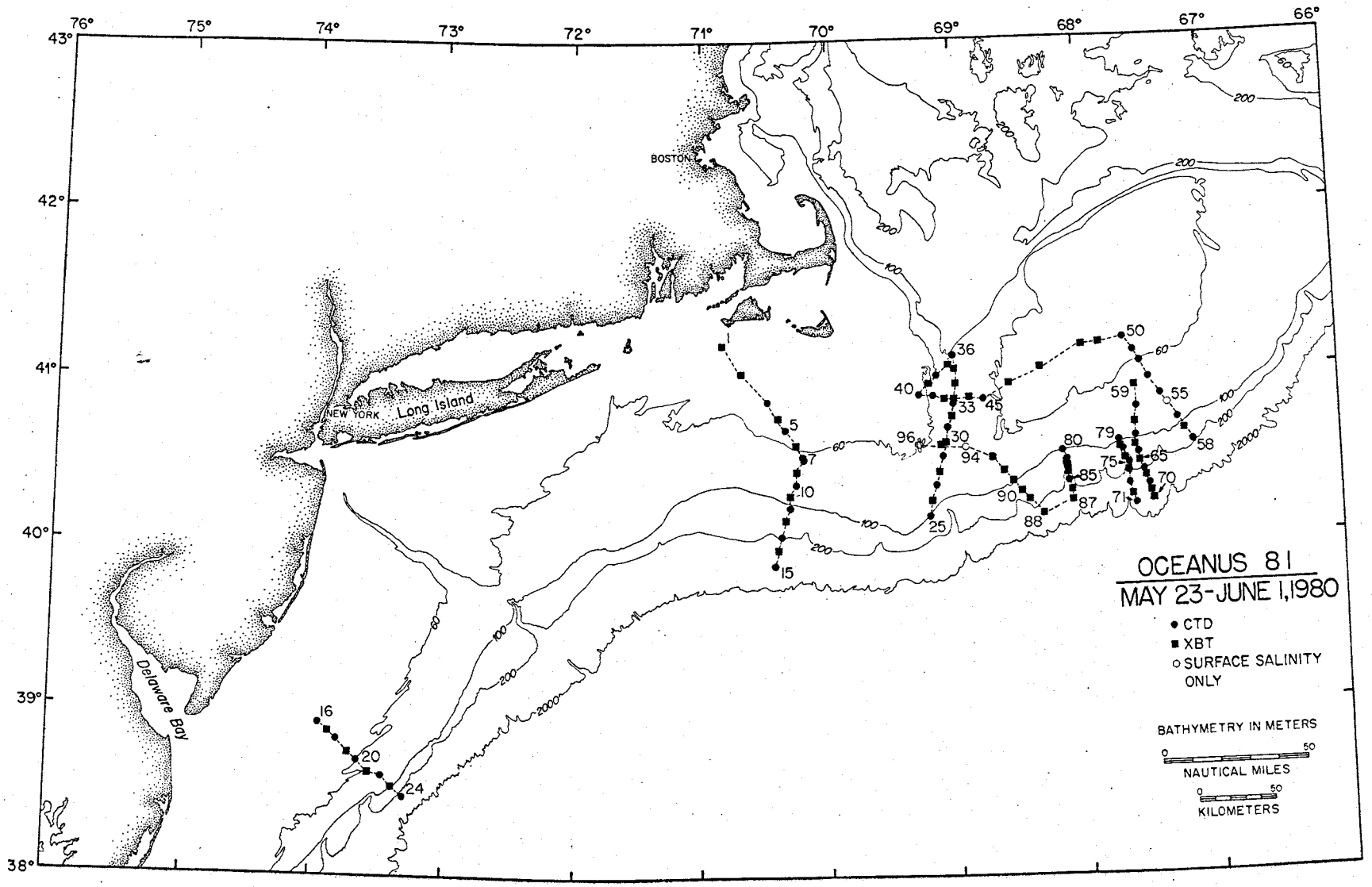
Moorings Lost: 2

Surface, GBK
Surface, GBQ (located with sidescan)

Surface Samples; 17

Number	Sta./loc.	Latitude	Longitude	Depth	Resc.
4755	Q	40 29.5	70 12.5	67	Box core
4756	Q	40 29.4	70 12.6	67	Box core
4757	Q	40 29.4	70 12.6	67	Box core
4758	Q	40 29.4	70 12.8	67	Box core
4759	Q	40 29.6	70 12.1	67	Gravity core
4760	B	38 42.2	73 39.3	62	Smith mac
4761	R	40 30.0	69 06.5	80	Smith mac
4762	N	40 50.9	69 02.3	87	Smith mac
4763	N	40 51.3	69 01.3	87	Smith mac
4764	K	41 02.7	67 34.8	65	Box core
4765	K	41 01.9	67 34.5	65	Box core
4766	K	41 02.7	67 33.2	65	Van Veen
4767	A	40 51.3	67 23.9	86	Box core
4768	A	40 50.9	67 24.1	87	Van Veen
4769	Lyd. Can.	40 23.9	67 40.1	627	Box core
4770	Oc. Can.	40 23.9	68 08.3	560	Box core
4772	Slope	40 09.4	68 20.1	642	Box core

I Cruise Track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BOSTON
NEW YORK
Long Island
Delaware Bay
OCEANUS 81
MAY 23-JUNE 1,1980
• CTD
■ XBT
○ SURFACE SALINITY ONLY
BATHYMETRY IN METERS
0 50
NAUTICAL MILES
0 50
KILOMETERS

II Station List

Station List

OCEANUS 81

23 - May, 1980

Station No.	Depth (m)	Latitude	Longitude	XBT	CTD	Nutrients	Surface Salinity	Date	Time
1	20	41° 10.81'N	70° 50.48'W	✓			✓	5-23-80	1355
2	49	41° 00.52'N	70° 41.49'W	✓			✓		1507
3	55	40° 50.61'N	70° 29.16'W		✓	✓			1714
4	51	40° 44.57'N	70° 23.92'W	✓			✓		1840
5	53	40° 40.1' N	70° 20.8' W		✓	✓	✓		1925
6		40° 35.14'N	70° 15.73'W	✓			✓		2025
7	67	40° 29.86'N	70° 12.09'W		✓	✓	✓	5-24-80	0111
7a	67	40° 30.4' N	70° 11.95'W		✓				0205
8	74	40° 25.31'N	70° 15.35'W	✓			✓		1430
9	88	40° 20.15'N	70° 15.58'W		✓	✓			1540
10	97	40° 16.23'N	70° 18.58'W	✓			✓		
11	107	40° 12.55'N	70° 18.00'W		✓	✓	✓		1631
12	120	40° 07.96'N	70° 20.73'W	✓			✓		1726
13	193	40° 02.2' N	70° 22.08'W		✓	✓	✓		1802
14		39° 57.22'N	70° 34.30'W	✓			✓		1940
15	775	39° 51.42'N	70° 25.38'W		✓	✓	✓		1935
16	37	38° 56.19'N	73° 57.10'W		✓	✓	✓	5-26-80	0059
17	43	38° 53.11'N	73° 52.32'W				✓		0210
18	47	30° 50.01'N	73° 48.39'W		✓	✓	✓		1404
19	~ 50	38° 45.55'N	73° 43.12'W	✓			✓		0335
20	61	38° 42.22'N	73° 39.13'W		✓	✓	✓		0410
21	~ 62	38° 38.03'N	73° 33.48'W	✓			✓		0502
22	80	38° 36.51'N	73° 27.36'W		✓	✓	✓		0539
23	~ 103	38° 32.63'N	73° 22.5' W	✓			✓		0635
24	460	38° 29.20'N	73° 17.21'W		✓	✓	✓		0756
25	104	40° 09.3' N	69° 12.96'W		✓	✓	✓	5-27-80	0445
26	96	40° 14.82'N	69° 12.12'W	✓			✓		0524
27	89	40° 20.05'N	69° 09.88'W		✓	✓	✓		0602
28	84	40° 25.01'N	69° 08.7' W	✓			✓		0655
29	80	40° 29.92'N	69° 06.28'W		✓	✓	✓		1149
30	77	40° 35.5' N	69° 05.37'W	✓			✓		1301
31	82	40° 40.86'N	69° 04.11'W		✓	✓	✓		1330
32	77	40° 44,93'N	69° 02.47'W	✓			✓		1427
33	90	40° 50.34'N	69° 06.96'W		✓	✓	✓		1330
34	87	40° 56.47'N	69° 00.7' W	✓			✓	5-28-80	0012
35	82	41° 01.65'N	69° 00.98'W	✓			✓		0045
36	97	41° 06.43'N	69° 01.46'W		✓	✓	✓		0125
37	85	41° 03.1' N	69° 03.5' W	✓			✓		0201
38	63	40° 59.55'N	69° 09.46'W		✓	✓	✓		0235
39	63	40° 56.37'N	69° 13.02'W	✓			✓		0311
40	52	40° 52.48'N	69° 17.75'W		✓	✓	✓		0341
41	68	40° 52.06'N	69° 11.39'W		✓	✓	✓		0447
42	~ 70	40° 50.82'N	69° 05.71'W	✓			✓		0537

Station No.	Depth (m)	Latitude	Longitude	XBT	CTD	Nutrients	Surface Salinity	Date	Time
43	83	40° 50.86'N	69° 01.64'W	✓			✓	5-28-80	0556
44	72	40° 51.59'N	68° 54.38'W	✓			✓		0630
45	67	40° 50.50'N	68° 47.63'W		✓	✓	✓		0706
46	45	40° 56.03'N	68° 35.25'W	✓			✓		0828
47	44	41° 01.71'N	68° 20.29'W	✓			✓		0941
48	50	41° 08.87'N	68° 00.88'W	✓			✓		1946
49	32	41° 09.93'N	67° 52.48'W	✓			✓		2030
50	52	41° 11.01'N	67° 41.24'W		✓	✓			2128
51	58	41° 06.46'N	67° 36.59'W		✓	✓	✓		2232
52	65	41° 02.37'N	67° 33.15'W		✓	✓			2326
53	72	40° 56.93'N	67° 29.23'W		✓	✓	✓	5-29-80	0048
54	85	40° 51.21'N	67° 24.12'W		✓	✓	✓		0142
55	92	40° 47.20'N	67° 20.94'W				✓		0223
56	97	40° 41.98'N	67° 16.73'W		✓	✓	✓		0300
57	115	40° 37.14'N	67° 13.03'W	✓			✓		0347
58	168	40° 33.64'N	67° 09.96'W		✓	✓	✓		0416
59		40° 39.71'N	67° 15.98'W				✓		0515
59	73	40° 54.05'N	67° 36.48'W	✓			✓		2148
60	80	40° 46.55'N	67° 35.82'W		✓	✓	✓		2237
61	85	40° 41.37'N	67° 36.55'W	✓			✓		2331
62	98	40° 35.88'N	67° 36.84'W		✓	✓	✓	5-30-80	0004
63	113	40° 33.44'N	67° 36.07'W				✓		0030
64	139	40° 29.79'N	67° 35.18'W		✓	✓	✓		0057
65	143	40° 27.07'N	67° 34.65'W	✓			✓		0132
66	179	40° 24.40'N	67° 33.12'W		✓	✓	✓		0151
67	461	40° 22.05'N	67° 32.18'W	✓			✓		0223
68	1075	40° 19.13'N	67° 30.83'W		✓	✓	✓		0245
69		40° 16.50'N	67° 30.17'W	✓			✓		0350
70	1730	40° 13.75'N	67° 28.84'W	✓			✓		0402
71	2075	40° 12.01'N	67° 36.69'W		✓	✓	✓		0446
72		40° 15.52'N	67° 38.47'W	✓			✓		0625
73	1218	40° 19.10'N	67° 40.01'W		✓	✓	✓		0652
74	475	40° 23.67'N	67° 40.44'W	✓			✓		0822
75	515	40° 26.24'N	67° 39.84'W		✓	✓	✓		0842
76	420	40° 28.31'N	67° 41.48'W	✓			✓		0930
77	305	40° 31.28'N	67° 42.77'W		✓	✓	✓		0955
78	130	40° 32.69'N	67° 43.70'W	✓			✓		1053
79	95	40° 35.01'N	67° 44.88'W		✓	✓	✓		1106
80	104	40° 31.88'N	68° 11.40'W		✓	✓	✓	5-31-80	1405
82	360	40° 28.11'N	68° 09.09'W		✓	✓	✓		1700
82A	360	40° 27.45'N	68° 09.13'W	✓					1706
83	225	40° 26.20'N	68° 08.56'W	✓			✓		1717
84	485	40° 24.03'N	68° 08.53'W	✓			✓		1731
85	715	40° 21.07'N	68° 08.27'W		✓	✓	✓		1932
86	~ 1000	40° 17.62'N	68° 06.93'W	✓			✓		2045
87	1300	40° 14.0' N	68° 05.96'W	✓			✓		2107
88	~ 500	40° 09.44'N	68° 20.12'W	✓			✓		2255
89	160	41° 14.56'N	68° 26.51'W	✓			✓		
90	132	40° 17.60'N	68° 30.20'W	✓			✓		2350
91	100	40° 21.22'N	68° 34.31'W	✓			✓	6-1-80	0016
92	91	40° 24.98'N	68° 38.31'W	✓			✓		0042
93	75	40° 29.80'N	68° 43.45'W	✓			✓		0116
94	71	40° 33.65'N	68° 56.80'W				✓		
95	81	40° 34.45'N	69° 06.76'W	✓			✓		0258
96		40° 34.14'N	69° 17.07'W				✓		0400

III Bridge Log

Vessel OCEANUS

Cruise #81

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+4	GMT			N	W	Friday - 23 - May - 80
	1136	1536	DEPARTURE		WOODS HOLE		Buoy # 1 & 2
	Var.	Co/spd	to S.W. Shoal				
	1344	S.W. Shoal Buoy			1mi ϕ 090°		c/c 144°-G
	@	155 RPM					

Vessel OCEANUS

Cruise # 81

LORAN LOG

Date	Time	Sta.	+/-.	Reading	N Latitude	W Longitude	Remarks
5/23/80	+4 LMT	GMT			NORTH	WEST	23 MAY 1980
	1350	1750	RADAR R+B		41° 11.2	70° 50.4	XBT DROP BEGIN
	1400	1800	DR		41° 10.5'	70° 49.7'	
	1406	1806	SAT	39³	41° 08.072'	70° 46.026'	
	1500	1900	LC		41° 03.4'	70° 43.5'	
	1540	1940	LC		40° 58.4'	70° 38.7'	
	1615	1915	LC		40-50.9	70-33.9	V/C TO CTD STA.
	1630	1630	LC		40-50	70-30.4	HOVE TO CTD # 1
	1636	2036	SAT	20³	40-50.258	70-29.224	
	1710	2110	LC		40-50.6	70-29.2	CTD OVER THE SIDE
	1738	2138	SAT	15³	40-50.809	70-29.444	
	1755	2155	LC		40-51	70-29.2	FIN CTD S/C 150 G,
	1820	2220	Sat	52²	40-47.33	70-26.05	
	1911	2311	LC		40-39.9	70-20.9	HOVE TO CTD # 2
	1950	2350	LC		40-40.3	70-20.8	FIN STA. S/C 145 G, 155 RPM
	2003	0003	LC		40-38.68	70-19.26	
	2103	0103	LC		40-29.69	70-12.4	H-T - Mooring Sil Q
	2150				40-29.74	70-12.35	Recover Sub-Surface Mooring
							2300 - Recover Tripod
	2356	0356	LC		40-29.53	70-12.41	

Vessel OCEANUS

Cruise #81

LORAN LOG

Date	Time +4 GMT	Sta. GMT	+/-.	Reading	Latitude North	Longitude West	Remarks
9/24/90							
	0000	1400	LC		40° 29.9'	70° 12.4'	
	0418	0418	SAT		40° 29.957		
	0446	0446	SAT	12²	40° 29.158'	70° 12.284'	
	0447	0447	LC		40° 29.63'	70° 12.33'	TRIED IN H2O # 194
	0448	0448 LC	25238.9 43498.9	14199.2	40° 29.65'	70° 12.35'	ON BOTTOM .1 I from West .3 " EAST
	0500	0500	LC		40° 29.74'	70° 12.32'	
	0518	0518	LC		40° 29.95'	70° 12.23'	CTD in H2O
	0531	0531	LC		40° 30.07'	70° 12.18'	CTD out H2O
	0555	0555	LC		40° 30.22'	70° 12.09'	REPEAT OF LAST CTD in H2O
	0602	0602	LC		40° 30.35	70 12 18	CTD ON SCREENCE
	0606	0606	SAT	58⁵	40° 30.296'	70° 12.388'	
	0610	0610	LC		40° 26.67'	70° 12.31'	0210 BEGIN SIDE SCAN MAN. SIDE SCAN
							0320 FW SIDE SCAN
	1347	0747	LC		40° 30.28	70° 12.10'	
	0450	0850	LC		40 29.5	70 12.7	BOX CORE AWAY
	0510						BOX CORE ONBOARD

Vessel OCEANUS

Cruise #81

LORAN LOG

Date	+4 Time	GMT ~~Sta.~~	+/-.	Reading	N Latitude	W Longitude	Remarks
							24 MAY '80
	0520	0920	SAT ~~LC~~	55.4	40-29.105	70-12.753	
	0634	1034	SAT	44.3	40-29.092	70-12.893	
	0706	1106	SAT	22.3	40-29.537	70-12.586	
	0817	1217	LC		40-29.37	70-12.73	Box Core #2 W. Buoy ∅ 034° .28 mi
	1103	1503	LC		40-29.37	70-12.77	Box Core #3 W. Buoy ∅ 031° .27 mi
	1130	1530	SAT		40° 29.895'	70° 12.322'	
	1200	1600	LC		40° 29.47'	70° 12.81'	
	1204	1604	LC		40° 29.44'	70° 12.97'	Box Core #4 W. Buoy ∅ 065° .52 mi
	1316	1716	SAT		40° 29.56'	70° 12.019'	
	1327	1727	LC		40° 29.57'	70° 12.20'	" E buoy .17 mi W buoy .28 mi
							∅ E 180 ∅ W 270
	1341	1741	LC		40° 29.5	70° 12.74'	Core #5 in H2O
	1347	1747	LC		40° 29.51	70° 12.82	FN Core #4 on Surface
							1350 S/C 95° 160 RPM
	1430	1830			40° 24.21'	70° 15.91'	c/c 175°
	1500	1900	LC		40° 20.15'	70° 15.68'	HT XY CTD on STA
	1509	1909	LC		40° 20.13'	70° 15.83'	CTD in H2O

Vessel Oceanus

Cruise 81

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
May 24	+4 LMT	GMT			North	West	
	1514	1914			40° 20.14'	70° 15.93'	CTD @ x 2/ m of H_2O
	1521	1921			40° 20.15'	70° 16.05'	CTD Repeat in H_2O
	1526	1926			40 20.16'	70° 16.15'	FW CTD
	1610	2010	LC		40- 15.2	70- 19.3	
	1628	2028	LC		40- 12.5	70- 18.2	H.T. CTD #12
	1655	2055	LC		40- 12.8	70- 18.6	FW STA, S/C 195G, 160 RPM
	1756	2156	LC		40-02.2	70-22.2	H.T. CTD #13
	1821	2221	LC		40-02.5	70- 22.2	FW STA S/C 195G, 160 RPM
	1832	2232	SAT		40-00.374	70- 25.054	
	1858	2258	SAT	23°/3	39-57.410	70-24.222	
	1900	2300	LC		39-57.2	70-24.4	
	1932	2332	LC		39-51.4	70-25.5	H.T. CTD #14
							2010- S/C 245°-6 @ 170 RPM
	2101	0101	LC		39-47.65	70-37.9	

Vessel _____ Page 6

Cruise _____

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
1980 May 24	+4 GMT	GMT			North	West	
	2210	0210	LC		39-42.0	70-53.57	
	2224	0224	Sat	67° 3	39-40.83	70-56.3	
	2307		LC		39-37.3	71-06.1	
1980 May 25	0000 2400	0400	LC		39°32.41'	71°18.58'	c/c 246
	0010	0410	SAT	9 9	39 31 529	71° 20.551	
	0100	0500	DR		39° 27.2'	71° 32.4'	
	0114	0514	LC		39°26.07'	71° 35.35'	
	0116	0516	SAT	87 6	39° 25.710'	71° 39.039'	
	0116	0516	LC		39° 25.95'	71° 35.96'	
	0142	0542	LC		39° 23.7'	71° 41.73'	
	0142	0542	SAT	33 3	39° 23.625'	71° 41.536'	
	0200	0600	LC		39° 22.15'	71° 41.14'	c/c 248
	0302	0702	LC		39 16.91'	72° 00.68	
	0328	0728	SAT	38 3	39° 15.792'	72° 01.774'	
	0345	0745	LC		39 12.89'	72. 12.30'	

Vessel OCEANUS

Cruise #81

LORAN LOG

Date	Time	GMT ~~Sta.~~	+/-.	Reading	N Latitude	W Longitude	Remarks
							25 MAY '80
	0400	0800	LC		39 - 12.0	72 - 15.0	
	0814	0814	SAT	14^3	39 - 13.708	72 - 18.536	-WRONG CO+SPD
	0500	0900	LC		39 - 06.6	72 - 28.5	
	0546	0946	SAT		39 - 03	72 - 39.2	
	0600	1000	LC		39 - 02.1	72 - 42.5	
	0700	1100	LC		38 - 57.5	72 - 52.8	
	0732	1132	SAT	78^3	38 - 55.064	73 - 84.713	
	0800	1200	LC		38 - 53.0	73 - 11.3 C	
	0900	1300	LC		38 - 48.47	73 - 25.86	C/C 240 · C
	1002	1402			38 42.32	73 39 18	1001 H-T Site "MB"
							1030 - Recover Subsurface mooring
	1200	1600	LC		38° 46.61'	73° 39.35'	1115 Recover Tripod.
	1256	1656	LC		38° 42.58'	73° 36	[illegible]
							1258 [illegible]
	1331	1731	LC		38° [illegible]	73° 38.79	[illegible]
	1333						[illegible]

Vessel OCEANUS

Cruise # [redacted] 81

LORAN LOG

Date	Time +H LMT	Sta. GMT	+/-.	Reading	Latitude NORTH	Longitude WEST	Remarks
							25-May-80
							1433 HOOKED BUOY S
							1517 LET GO BUOY S
							SAME POSIT.
							UNDW. TO BUOY A
							FOR RELOCATION H/T OF "A"
							1540 HOOKED "A"
	1600	2000	LC		38° 42.45'	73° 37.22'	
							1625 SET BUOY "A"
	1626	2026	SAT	13 3	38-44.411	73-38.341	
							1745 SET TRIPOD
	1746	2146	SAT	16 4	38-42.547	7338.536	
							1905 SET SUBSURFACE MOORING
	1930	2330	SAT	81 3	38-42.479	73-38.596	
							2030 Van Co 2 spkr side scanning at sta "MB"
	2108	0108	Sat		38°-41.69	73°-39.91	
	2230	0230	Sat		38°-41.61	73°-37.30	
	2308	0308			38-42.34	73-37.18	END Sta S/C 313° @ 155 RPM
	2400	0410	LC		38°48.76'	73°46.28'	
	[illegible]	[illegible]			38° 54.16'	73° 53.3'	C/C 321

Vessel _____ Page 9

Cruise #81 LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
1980 May 26	+4 LMT	GMT			NORTH	WEST	
	0116	0516			38° 56.18'	73° 55.24'	0110 Mon ON CTD STA 0116 BEGIN CTD
	0126	0526			38° 56.28'	73° 55.48'	0128 S/C 132 NEXT CTD STA PTD out H2O
	0234	0634	LC		38° 49.98'	73° 46.50'	0234 ON CTD STA
	0242	0642	LC		38° 49.94'	73° 46.4'	CTD in H2O
	0238	0638		84 3	38° 49.96'	73° 48.145'	
	0250	0650	LC		38° 49.94'	73° 46.43'	CTD out H2O S/C 154 NEXT STA
	0805	0805	LC		38-42.3	73-39.3	H.T. CTD STA.
	0472	0872					FIN STA S/C 130S, 150 RPM
	0500	0900	LC		38-38.2	73- 33.9	S/C 110S.
	0532	0932	LC		38 -36.5'	73-27.4	H.T. CTD STA
	0600	1000					FIN STA S/C 132S, 150 RPM
	0636	1036	SAT	40 3	38-32.403	73-22.270	
	0705	1105	LC		38- 29.2	73-17.3	H.T., CTD STA.
							0803 END STA S/C 056-C @ 155 RPM

Vessel OCEANUS

Cruise #81

LORAN LOG

Date	Time +4	Time GMT	Sta.	+/-.	Reading	Latitude N	Longitude W	Remarks
								May 26, 1980
	0900	1300	LC			38°34'.35	73°06'.48	
	1005	1405	LC			38-40.73	72-53.62	
	1026	1426	Sat		55 3	38-42.79	72-49.34	
	1100	1500	LC			38-45.99	72-42 67	
	1200	1600	LC			38° 51.71'	72.° 30.8'	
	1214	1614	SAT			38° 53.091'	72° 27.979'	
	1300	1700	LC			38° 56.75'	72° 20.25'	
	1400	1800	LC			39° 02.69'	72° 18.17°	
	1500	1900	LC			39°08.05	71°56.85	c/c 053°
	1536	1936	SAT		28 3	39- 11.781	71- 50.394	
	1545	1945				39° 12.64'	71° 48.21'	
	1600	2000	LC			39- 14.2	71- 46.0	
	1642	2042	SAT		—	39- 18.613	71- 38.363	
	1700	2100	LC			39- 20.4	71- 35'	
	1700	2100	SAT		07 5'	39- 20.381	71- 35.072	
	1800	2200	LC			39- 26.8	71- 24.1	

Vessel OCEANUS

Cruise #81

LORAN LOG

Date	Time	GMT ~~55a~~.	+/-.	Reading	Latitude	Longitude	Remarks
							26 MAY '80
	1847	2247	LC		39-32.25	71-15.50	c/c 068-G
	1900	2300	LC		39-33.2	71-12.8	
	2003	0003	LC		39-37 66	70 59.28	
	2100	0100	LC		39-41.79	70-46.80	c/c 069
	2200	0200	LC		39-45.83	70-33.18	150 RPM
	2222	0222	Sat	53° 4	39-47.02	70-28.32	
	2310	0310	LC		39-50.4	70-17.5	
	2409	0409	LC		39°54.19	70° 04.10'	
	0100	0500	LC		39°56 81'	69° 52.23'	
	0509	1609	LC		40°00.77	69°38.55	c/c 070
	0800	0900	LC		40° 04.19	69°27.93	c/c 063
	0744	0744	LC		40° 07.08'	69° 19.35'	c/c 059
	0400	0800	LC		40-08	69-16.7	

Vessel OCEANUS

Cruise #81

LORAN LOG

Date	Time	GMT ~~Sta.~~	+/-.	Reading	N Latitude	W Longitude	Remarks
							27 MAY '80
	0423	0823	LC		40-10	69-12.7	HOVETO, CTD STA.
	0447	0847					FIN STA, S/C 014G, 150 RPM
	0500	0900	LC		40-11.3	69-12.8	
	0528	0928	SAT	82 3	40-15.639	69-10.679	
	0554	0954	SAT	29 3	40-19.790	69-09.593	
	0557	0957	LC		40-20	69-09.8	HOVETO, CTD STA
	0622	1022	LC		40-20.1	69-10.0	FIN STA, S/C 015G, 150 RPM
	0700	1100	LC		40-26	69-08.3	
	0723	1123	LC		40-29.9	69-07	HOVETO AT STA "R", CTD
							0830 Recover Sub Surface Mor
	0916	1316	LC		40-29.91	69 06.89	0916 - Tripod abd.
							1105 - Recover both surface
							mooring at site "R"
	1133	1533	LC		40-30.02	69-06.47	Grab Sample
							CTD in WD 1155
	1200	1600	LC		40°29.92'	69°06.3'	1207 and WD
							1213 S/C 011 next Sta
	1300	1700	LC		40°36.92'	69°04.93'	

Vessel _____

Cruise _____

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
1980 May 27	+4 LMT	GMT			NORTH	WEST	
"	1325	1725	LC		40° 46.83'	69° 04.07'	HT on STA
	1335	1735	LC		40° 40.84'	69° 04.1'	CTD in H_2O
	1345	1745	LC		40° 40.79	69° 04.07'	CTD on Board
							1347 S/L "
	1400	1800	LC		40° 42.6	69° 03.39°	
	1416	1816	L		40° 44.91'	69° 03.7'	C/C 327 XBT LAUNCHED
							C/ 1449 RPM 120
	1500	1900	LC		40° 49.14'	69° 05.2'	
	1525	1925	LC		40° 50.4'	69 01.95'	On STA Hydrophone in H_2O
	1530	1930	LC		40° 50.31	69° 01.99	CTD in H_2O
							1605 RECOVER TRIPOD
	1636	2036	SAT	06 3	40-52.013	69-00.380	1637 " SUBSURFACE MOORING
							1715 " SURFACE BUOY
	1804	2204	LC		40-50.9	69-02.3	BOTTOM GRAB
	1825	2225	LC		40-51.3	69-01.3	" "
	1918	2318					V/S TOWING SIDE SCAN

Vessel OCEANUS

Cruise

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+4	GMT			N	W	27-May-80
	2000	0000	LC		40-51.5	69-01.10	
	2200	0200	LC		40-51.62	69-01.24	
	2301	0301	LC		40 50.79	69-01.19	Recover Surface Mooring Sit "N"
	2338	0338	LC		40 50.7	69 00.27	END Station @ "N" S/C 355°-G @ 150RPM
	2400	0400	LC		40°54.40'	69°00.52'	28 May-80
	0036	0436	SAT	24³	41°01.009'	69°03.928'	
	0102	0502	LC		41°04.59'	69°01.26'	
	0118	0518	LC		41°06.54'	69°01.46'	HT on CTD STA
	0127	0527	LC		41°06.41'	69°01.47'	CTD in H2O
							CTD out H2O 0138
	0140	0540	LC		41 06.2'	69 01.5'	FW STA 0140 S/C 222
							0155 C/C 230° g
	0200	0600	LC		41°03.43'	69°03.41'	
							0208 C/C 240° g 0226 C/C 250° g
	0230	0630	LC		40°59.59'	69 09 49	HT on CTD STA
	0236	0636	LC		40 59.5'	69 09.56'	CTD in H2O 242 CTD out H2O
							0245 FW STA S/C 233
							0300 C/C 229° g

Vessel Oceanus

Cruise 81

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
1980 May 28	+4 LMT	GMT			North	West	
	0300	0700			40° 57.71	69° 11.19	
	0340	0740			40° 52.5'	69° 17.78'	H.T. CTD STA
							CTD in H2O ⓓ
	0344	0744			40° 52.35'	69° 17.93'	in H2O
	0350	0750			40° 52.12	69° 18.12	out H2O
	0354						
	0354	0754			40° 52.04'	69° 18.31'	S/C 086 FW STA Next Sta
	0435	0835	LC		40-52.2	69-11.1	HOVE TO, CTD STA
	0505	0905	LC		40-51.7	69-11.8	FIN STA, S/C 095 G, 150 RPM
	0506	0906	SAT	13²	40-51.701	69-11.866	
	0600	1000	LC		40-50.9	69-00.6	
	0702	1102	LC		40-50.5	69-47.6	HOVE TO, CTD STA
	0724	1124	LC		40-50.9	69-47.6	FIN STA, S/C 070 G, 150 RPM
	0800	1200	LC		40-53.83	69 40.78	C/C 072
	0901	1301			40-52.68	68 28.29	

Vessel OCEANUS

Cruise

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
					N	W	May 28, 1980
	1000	1400			41-03.22	68-15.93	
							1015 c/c OG7
	1108	1508			41-07.79	68-02.4	1104-H-T
							1110-Cne Side Scan Surv Vas c/spds
	1200	1600	LC		41° 07.71'	68° 01.93'	
	1300	1700	LC		41° 08.29'	68° 01.85'	
	1351	1758	SHT	72³	41° 08.495'	68° 03.517'	
	1400	1800	LC		41° 05.57'	68° 03.6'	
	1500	1900	LC		41° 08.67'	68° 03.00'	0352 FW side scan
	1616	2016	LC		41-08.5'	68-02.8	SET BUOY 'D'
	1648	2048					SET BUOY 'I'
	1715	2115					SET BOTTOM TARGET V4S
							TOWING SIDE SCAN.
	1922	2322					SECURE SIDE SCAN
	1932 ~~2332~~	2332			41-08.4	68-03.5'	S/C090G, 150RPM
	2010	0010			41-09.45	67-55.89	
	1						

Vessel OCEANUS

Cruise

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+4	GMT			N	W	May 28, 1980
	2100	0100	LC		41-10.75	67-45.83	C/C 095 · G
	2126	0126	LC		41-11.0	67-41.23	2122 - H-T - CTD Sta
	2145	0145	LC		41-11.55	67-41.2	End CTD S/C 146 @ 150 R
							2150 C/C 150
	2200	0200	LC		41-10.05	67-39.69	
	2230	0230	LC		41-06.45	67-36.58	H-T · CTD
							2350 - S/C 155 - @ 150 R
	2338	0338	LC		41-02.41	67-33.03	2320 - H-T CTD
	2400	0400	LC		41° 02.5	67° 34.2'	S/C 143 Next Sta Use C/A Ext Sta
	0400				41° 56.99	67° 29.34	HT Sta CTD
	0400	0500	LC		41° 56.83'	67° 29.83°	End of CTD S/C 155
	0440	1540	LC		41° 51.19'	67° 24.07'	HT on Sta CTD
	1556	1556	LC		40° 50.84'	67° 25.82'	F U Sta S/C 125 g
	1558	1558	SAT	83 5	41° 51.163'	67° 55.174'	
	1658	1658	LC		40° 47.99	67° 16.79'	HT. on CTD Sta
	0214	0214	SAT	08 5	41° 39.953'	67° 22.786'	
	0315	0715	LC		40° 41 78	67 16.7	F U Sta S/C 148 g

Vessel OCEANUS

Cruise #81

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
1980 May 29	+4 LMT	GMT		#	NORTH	WEST	
							S/C 142° @ 0336
	0346	0746	SAT	14.4	40-34.939	67-17.653'	
	0410	0810	LC		40-33.7	67-09.9	HOVE TO, CTD STA
	0427	0827					FIU STA, S/C 327 G, 150 RPM
	0458	~~0858~~	~~SAT~~		40	67-	
	0500	0900	LC		40-37.9	67-14.2	
	0600	1000	LC		40-46.3	67-22.1	
	0602	1002	SAT	45.5'	40-46.625	67 22.623	
	0644	1044	SAT	20.3	40-52.519	67-28.520	
	0700	1100	LC		40-55.10	67-30.4	
	0747	1147	LC		41-01.9	67-34.5'	H.I. Clony Buoy 13, STA K
	0816	1216	LC		41-02.07	67-34.81	Box Core
	0906	1306	LC		41-01.93	67-34.56	Box Core
	1002	1402	LC		41 02 02	67-34 43	Grab Sample

Vessel OCEANUS

Cruise 81

LORAN LOG

Date	Time +4	Time GMT	Sta.	+/-.	Reading	Latitude N	Longitude W	Remarks
								May 29, 1980
	1011	1411	LC			41 02 15	67 34.45	Grab Sampl
	1027	1427	LC			41 02 55	67 33 33	Grey Sampl
	1030	143	LC			41 -02 58	67-33.32	Grab
	1104	1504	LC			41 02 11	67 33.93	Grab
	1124	1524	SGT			41° 01.170'	67° 33.593'	
	1149	1549	LC			41-02.35	67-33 42	Tripod on deck
	1200	1600	LC			41°02.4'	67°33.38'	
								1252 STA K Picked up "B" Buoy
								1336 "E" (STA K Picked up "E" Buoy
	1453	1753	LC			41° 02.17'	67°33.67'	"B" Buoy in Place (Left Go)
	1645	2045	LC			41- 02.3	67- 34	SGT 3RD BUOY
	1725	2125						SGT TRIPOD
	1800	2200						V4S TOWING SIDE SCAN
								AROUND SITE 'K'
	1804	2204	SA	45°?		41-01.890	67- 34.527	
	2000	0000	LC			41 02.53	67 33.39	
	2041	0041				41 03.5	67 33.65	END STA "K" S/C 190·G @ 150 RPM

Vessel OCEANUS

Cruise

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+4	GMT			N	W	29-May 80
	2136	0136	LC		40-55.5	67 36.53	C/C 175-G
	2238	0238	LC		40-46.58	67-35.88	H-T-CTD
	2258	0258	LC		40-46.64	67-35.88	END Stn S/C 184-G @ 150 RPM

Vessel OCEANUS

Cruise #81

LORAN LOG

Date	Time	GMT Sta.	+/-	Reading	Latitude	Longitude	Remarks
							30 MAY '80
	2400	0400			40°35.94	67°36.74	HT on CTD Sta
	0617	0717			40 35.87	68° 36.89'	END CTD S/C 164
							1255 S/C 170°
	1055	0455			41° 29.5'	67° 35.8'	H.T. CTD STA
							0112 FIN STA S/C 165°
							C/C 158
	0148	0548			40°39.45'	67° 33.13°	HT on CTD Sta
	0128	0628	SAT	13/3	40° 12.438'	67°30.325'	0208 FIN STA S/C 160 C/C 0216 C/C 161
	0240	0640			40° 19.17'	67°30.84'	HT CTD STA
	0328	0728			40° 18.29'	67 31.03'	0328 FIN STA S/C 161 C/C 0341 C/C 157°
	0401	0801	LC		40 13.8	67-28.9	S/C 249 G, XIST
	0438	0838	LC		40-12	67-36	H.T., CTD STA.
	0514	0914	SAT	20 3	40-12.048	67-36.842	
	0536	0936	SAT	624	40-11.975	67-37.054	
	0605	1005	LC		40-12.1	67-37	FIN STA, S/C 343 G, 150 RPM
	0645	1045	LC		40-19.1	67-40	H.T. CTD STA.

Vessel OCEANUS

Cruise #81

LORAN LOG

Date	Time	GMT ~~Sta.~~	+/-.	Reading	N Latitude	W Longitude	Remarks
							30 MAY '80
	0658	1058		04 2	40-19.245'	67 40.016	
	0755	1155	LC		40- 19.4	67- 40.7	FIN STA, S/C 004 G, 150 RPM
	0821	1221	LC		40-24.06	67-40.43	C/C 015
	0839		LC		40-26.26	67-39.83	0836 - H-T CTD
	0918	1318	LC		40-26.48	67.40.41	End Sta S/C 340-G
	0946	1346	LC		40-31.19	67-42.62	H-T CTD Sta
	1012	1412	Sat		40-30.39	67-42.38	
	1039	1439	LC		40 31.96	67 43.27	1040 END Sta S/C 340 @ 150 RPM
	1105	1505	LC		40-35.05	67-44.86	H-T CTD Sta
							1135 End Sta S/C 045-G
	[illegible]	1600	LC		40°39.87	67°39.77'	
	[illegible]	1620	SAT	13 3	40°42.000	67°34.147'	12 11 C/C 58
	[illegible]	1700	LC		40°46.67'	67° 29.6'	
	1545	1745	LC		40°51.32'	67°23.99'	12 1403 H.T. on STA GRAB, SWGRAB
	[illegible]	1724	LC		40°51.22'	67°23.83'	1424 1427 GRAB DOWN, SWG,

Vessel OCEANUS

Cruise

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
1980 May 30	+4 LMT	GMT			NORTH	WEST	
	1432	1832			40°51.06'	67°23.85'	GRAB DOWN 1436 FWG
							1438 - 1500 HOLD LOCK ON STA
	1500	1900			40°51.35'	67°24.00'	GRAB DOWN 1504 FWG
	1507	1907			40°51.33'	67°24.11'	GRAB DOWN 1509 FWG
	1512	1912			40 51 25	67 24.04	GRAB DOWN 1520 FWG
	1522	1922			40°51.13'	67°24.09'	GRAB DOWN 1526 FWG
	1529	1929			40°51.04'	67°24.08'	GRAB DOWN 1533 FWG
							S/C 1548 327°
	1700	2100	LC		41- 59.9	67 32.5	
	1712	2112			41- 01.9	67- 34.1	V's AT SITE 'K'
	1730	2130					SET SUB SURFACE MOORING
	1758	2158			"	"	S/C 191G, 150 RPM
	1900	2300	SAT		40-49.146	67-38.013	
	1900	2300	LC		40- 49.5	67- 38.1	
	1920	2320	SAT	7[3]	40-46.478	67 39.384	

Vessel OCEANUS

Cruise

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+4	GMT			N	W	
	2000	0000	LC		40-39.58	67-41.56	C/C 180
							2020 C/C 178-G
	2047	0047	LC		40-31.80	67-42.13	C/S 8kts. C/C 165-G
							Var C/spd for sounding survey
	2103	0103	LC		40-29.66	67-41.6	C/C 200-G
	2144	0144	LC		40-24.47	67 44.56	C/C 180-G
	2215	0215	LC		40-20.1	67-44.8	C/C 090 G
	2315	0315	LC		40-20.09	67-34.98	C/C 180-G
	2330	0330	LC		40-18.37	67-35.23	2328 C/C 265
	2355	0355	LC		40-18.25	67-39.84	C/C 270
	2400	0400	LC		40°18.33'	67°40.96'	

Vessel _____ Page 24

Cruise _____ LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
1980 MAY/31	24 LMT	GMT			NORTH	WEST	
	0000	0400			40° 18.35'	67° 40.96'	
	0027	0427			40° 18.61	67° 45.05'	c/c 180
	0036	0436			40° 17.12'	67 45.2'	c/c 193
	0056	0456			40° 17.19'	67° 42.27'	c/c 195
	0107	0507			40° 17.28	67 39.38	c/c 197
	0130	0530			40° 17.23	67° 35.11'	cc 180°
	0144	0544			40° 15.45'	67° 34.73'	c/c 263
	0200	0600			40° 15.21'	67° 37.72'	c/c 267
	0206	0606		79 3	40° 15.271	67° 37.4'	
	0212	0612			40° 15.7	67° 39.49'	c/c 270
	0245	0645			40 15.34'	67 45.04'	c/c 004° Box Core Sta
	0306	0706			40°18'	67°44.24'	c/c 0311 038°
	0323	0723			40° 19.64	67 42.69	c/c 0323 125
	0353	0753			40° 23.9	67° 40.18	W.T. for CTD, Box Core
	03558	07558	SAT	10 3	40-23.805'	67-0.286	

Vessel OCEANUS

Cruise # 81

LORAN LOG

Date	Time	GMT ~~Sta.~~	+/-	Reading	N Latitude	W Longitude	Remarks
							31 May '80
	0436	0836			40-23.7	67-40.1	START BOX CORE
	0520	0920					BOX CORE ONBOARD
	0540	0940	LC		40-24.2	67-40.3	S/C 340 S, 130 RPM
	0558	0958	LC		40-26.6	67-41.6	V/S TOWING SIDE SCAN
	0757	1157	LC		40-32.0	67-43.67	C/C 000-G
	0822	1222	LC		40-33 33	67 44-03	C/C 090-G
	0844	1244	LC		40 33.60	67 43.0	C/C 170
	0905	1305	LC		40-32-63	67-43-03	C/C 160
	0911	1311			40-32.32	67 42.96	C/C 150
	0914	1314			40-32 16	67 42 88	C/C 140
	0929	1329			40-31 71	67-42 33	C/C 090
	0942				40 31 98	67 41.36	C/C 130
							0945 C/C 160
	1005				40-31.4	67 41.00	END Side Scan Survey S/C 263 @ 150 RPM
	1100				40-30.91	67-53-34	C/C 250

Vessel OCEANUS

Cruise

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
1980 May 30	+4	GMT			N	W	MAY 31
	1200	1600			40° 38 78'	68° 06.49'	c/c 270° BEGIN ECHO SOUND SURVEY OF OCEANOGRAPHER CANYON
	1242	1642			40° 39.18'	68° 13.65'	c/c 000
	1247	1647			40° 39.85'	68° 13.6'	c/c 090
	1321	1721			40° 30.17'	68° 08.25'	c/c 180°
	1338	1738			40° 26.07'	68° 08.25'	c/c 170°
	1351	1751			40° 26.09'	68° 07.87'	c/c 090
	1359	1759			11	11	c/c 180 MAY 86
	1416	1816			40° 25 88	68° 08.12'	c/c 270
	1420	1820			40° 25.11'	68° 09.5'	c/c 350°
	1419	1819			40° 29 44	68° 10.77'	c/c 317
	1419	1819			40° 31 02	68° 11.08	c/c 041
	1433	1833			40° 31.84	68 11.3	c/c 080

Vessel Oceanus

Cruise 81

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
1980 May 31	+4 LMT	GMT			North	West	
	1539	1939			40° 31.93'	68° 11.45	H/T FOR CTD
							F
	1555	1958			40° 31.75'	68 11.35'	F/W STA
	1625	2025	LC		40- 28.1	68- 09	H.T. CTD STA
	1703	2103	LC		40- 28.0	68- 09.2	F/W STA, S/C 160G, 150RPM
	1750	2150	LC		40- 21.0	68- 08.1	~~S/C 160G~~ V/C
	1851	2251	LC		40-23 81	68-08 12	1845-H-T Box Core
	1909	2309					F/W STA S/C 175G, 150RPM
	1928	2328	LC		40- 21.0	68- 08.3	H.T. CTD STA.
	2027	0027	LC		40-21 68	68 08.1	END SG. S/C 167.6 @ 155RPM
	2106	0106	LC		40-14.0	68-05.95	C/C 245
	2135	0135	LC		40-11.67	68 12.4	C/C 247
	2100	0100	LC		40 09.86	68- 18.3	C/C 250
	2218	0218	LC		40-09.4	68- 20.07	2208 - H-T Box CORE
	2250	0250	LC		40-09.65	68 20.48	END STA S/C 318.6 @ 160 RPM

Vessel Oceanus

Cruise 81

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	2326	0326	SAT	10^3	40° 22.610'	68° 37.132'	
	0000	0400	LC		40° 19.07'	68 31.87'	
	0431	0431	LC		40° 23 21	68° 37 05'	
	0450	0450	SAT	704	40° 21.209'	68° 39.682'	0034 c/c 346°
	0500	0500	LC		40° 25 24	68 41.4'	
	0512	0518	LC		40° 27 716'	68° 43.33'	c/c 289°
	0516	0516	SAT	42^3	40° 29.361'	68° 43.427'	
	0530	0530	LC		40° 31.05'	68° 47.38'	
	0600	0600	LC		40° 32.86'	68° 53.86'	
	0631	0630	LC		40° 34.64'	69° 00.57	c/c 270°
	0640	0640	SAT	28^3	40° 34.449'	69° 03.095'	
	0707	0707	LC		40° 34.21'	69° 09 82	
	0724	0724	SAT	11^2	40° 34.575'	69 13.643'	
	0724	0724	LC		40° 34.26'	69° 13.29'	
	0732	0732	LC		40° 34.1'	69 15.6'	c/c 273
							c/c 0345 2.74
	0745	0745	LC		40° 34.12'	69 18.45'	
	0745	0815	LC		40-34.1	69- 25.5'	

Vessel OCEANUS

Cruise #81

LORAN LOG

Date	Time	GMT ~~Sta.~~	+/-.	Reading	N Latitude	W Longitude	Remarks
	0500	0900	LC		40-34.9	69-36.5	1 JUNE '80
	0506	0906	SAT	78 3	40-35.006	69-38.600	
	0524	0924	SAT	23 3	40-35.532	69-42.806	
	0600	1000	LC		40-36.5	69-51.8	
	0652	1052	SAT	NO FIM	40-38.123	70-05.066	
	0700	1100	LC		40-38.5	70-06.6	
	0712	1112	SAT	58 3	40-38.952	70-10.146	
	0800	1200	LC		40-40.8	70-21.53	C/C 323-G
	0900		LC		40 49.79	70-30.42	
	1008		LC		40-59.73	70 39.98	
	1100	1500	RADAR		40-07.5	70-47.7	
	1127				41-11.35	70-51.5	SW Shoal Buoy → 1.43 mi Var Co/epds

IV Smooth Sheets

42° N

41° N

40° N

71°

70°

69°

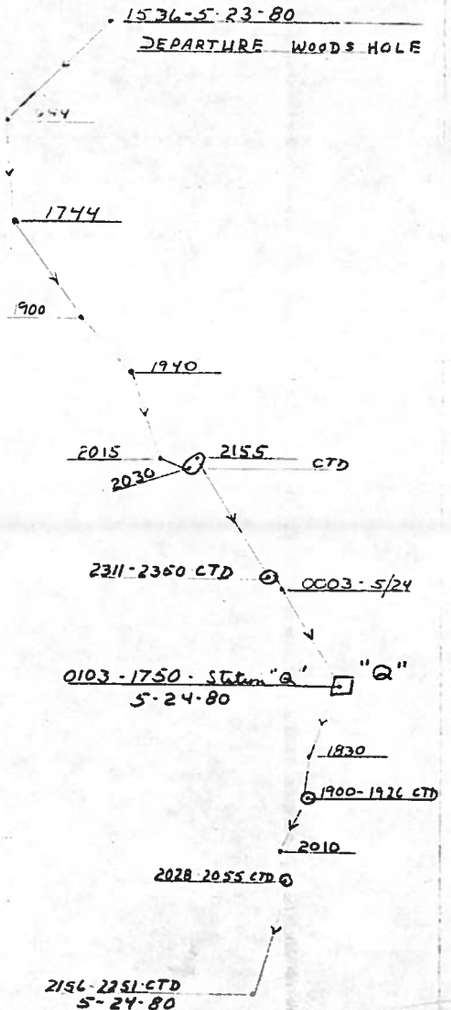
(1)

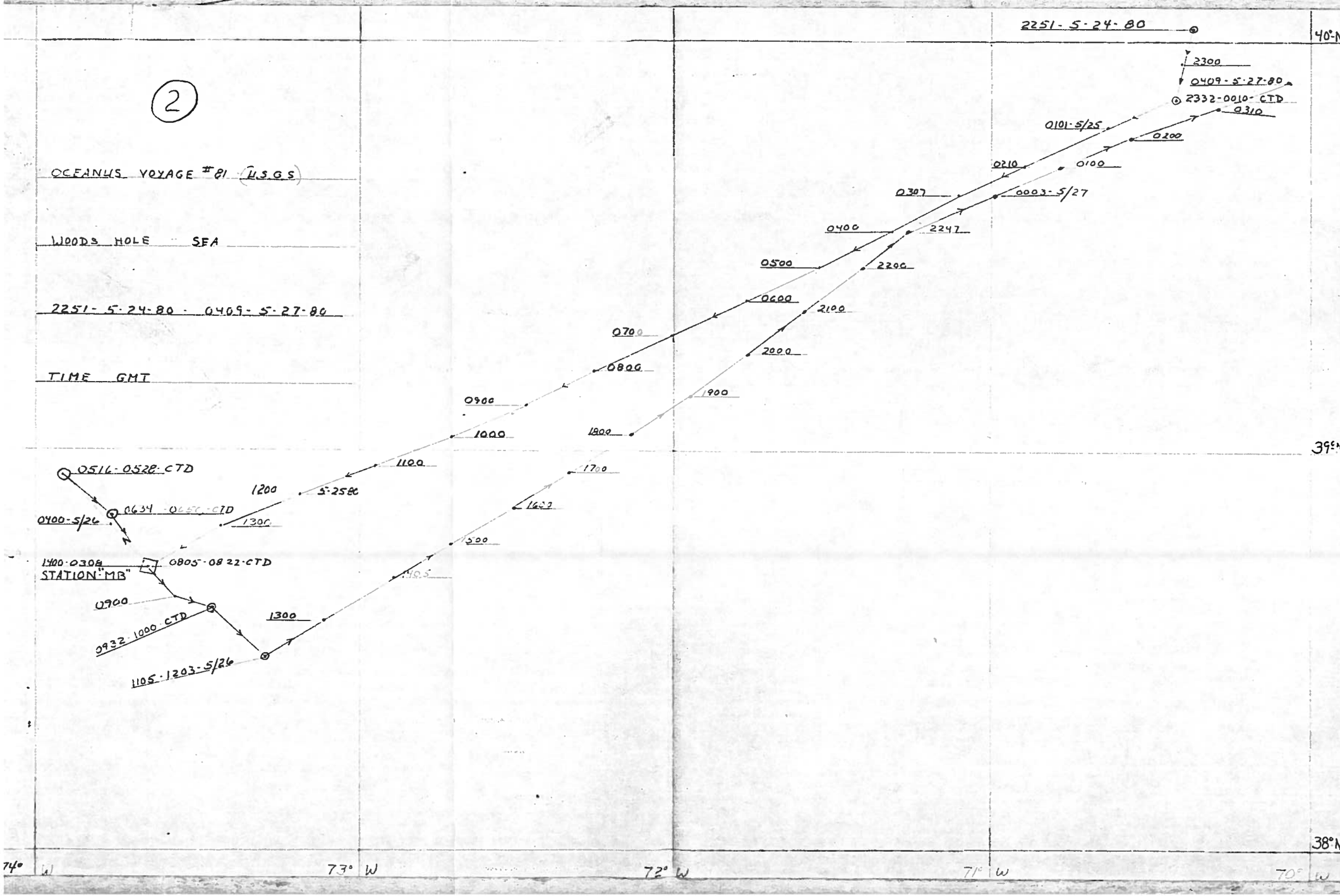
OCEANUS VOYAGE #81 - (USGS)

WOODS HOLE - SEA

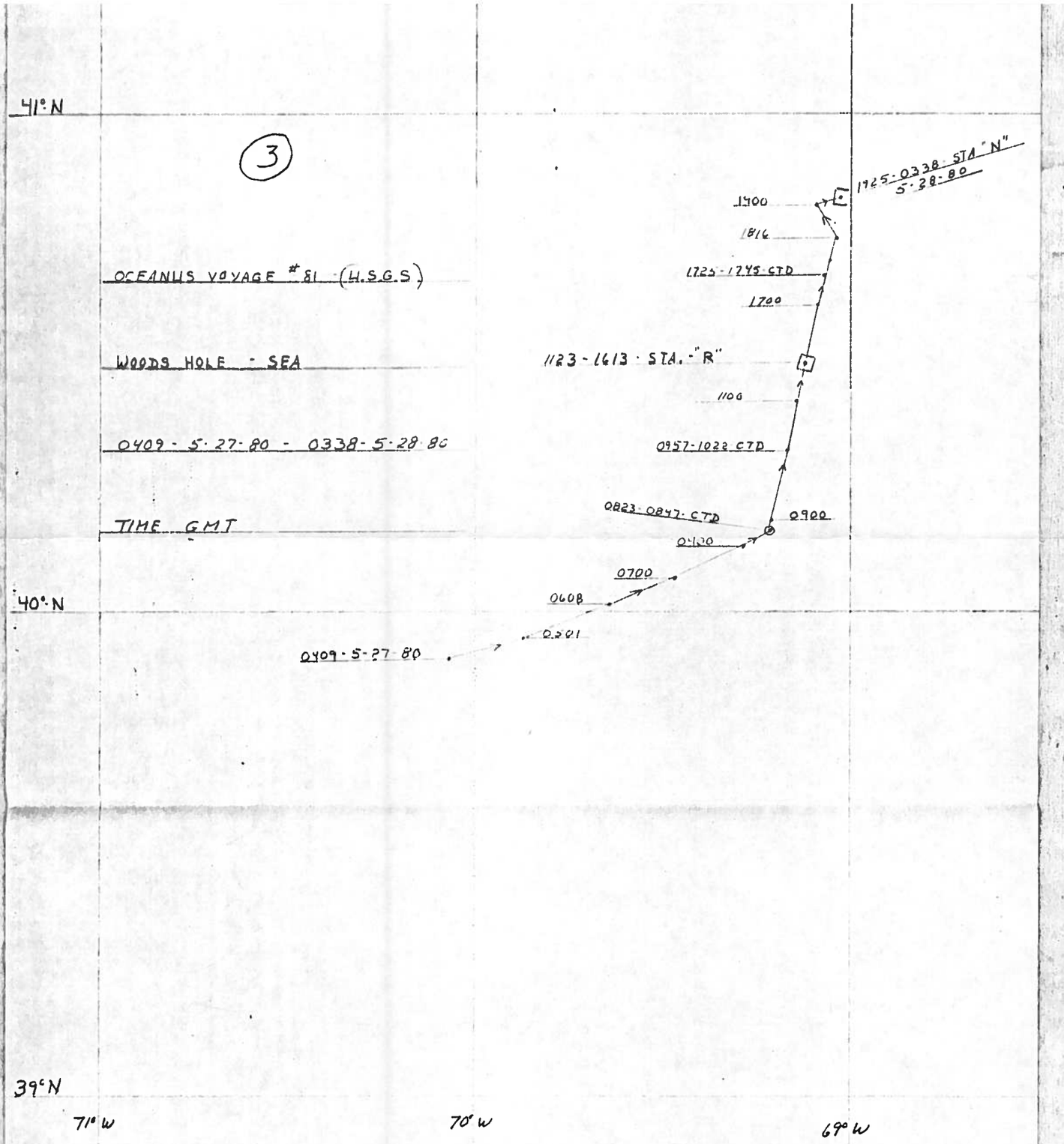
1536 - 5-23-80 - 2251 - 5-24-80

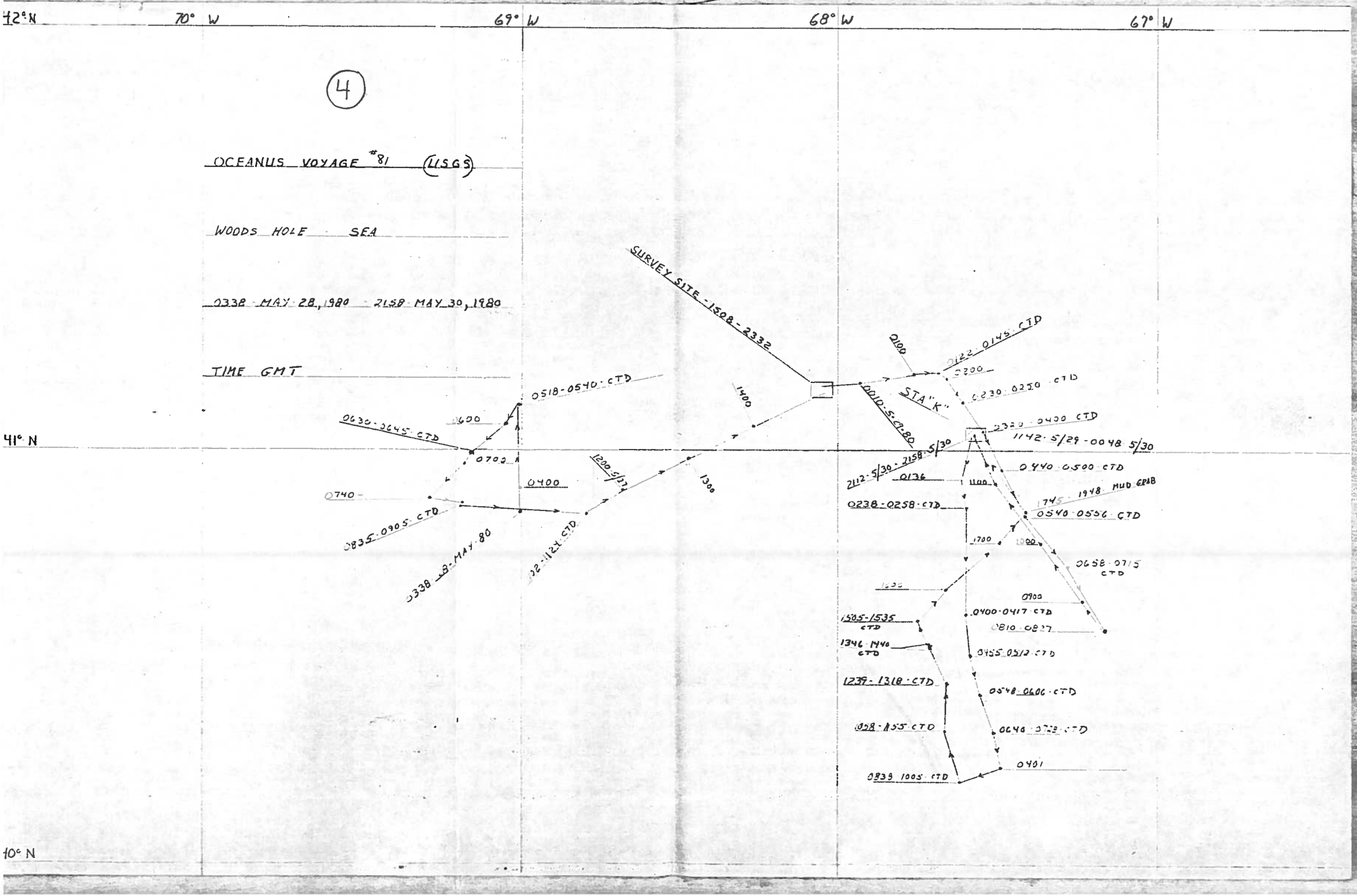
TIME GMT



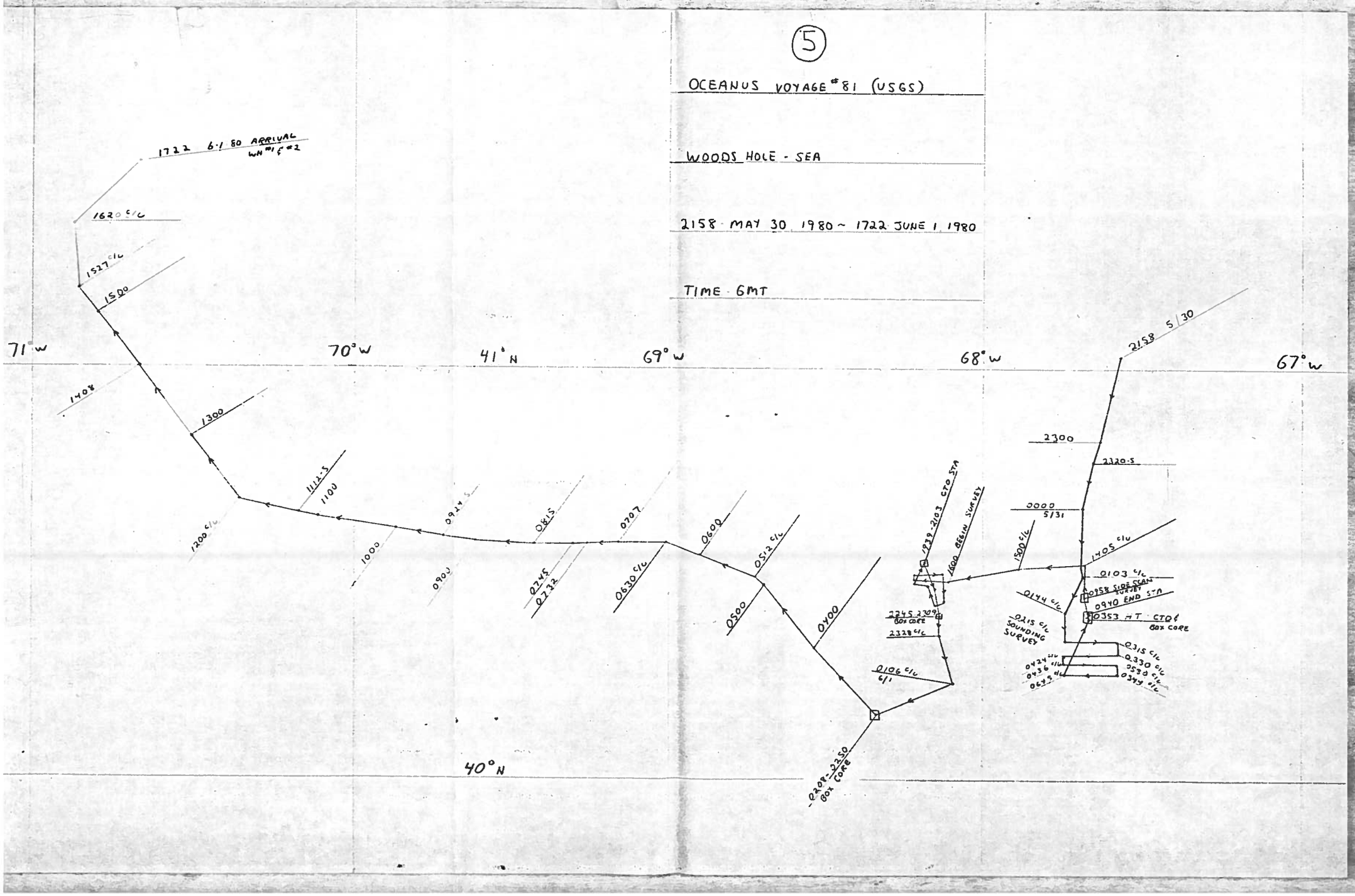


2
OCEANUS VOYAGE #81 (U.S.G.S)
WOODS HOLE SEA
2251-5-24-80 - 0409-5-27-80
TIME GMT
2251-5-24-80
40°N
2300
0409-5-27-80
2332-0010-CTD
0310
0101-5/25
0200
0210
0100
0307
0003-5/27
0400
2247
0500
2200
0600
2100
0700
2000
0800
1900
0900
1000
1800
39°N
1100
1700
0516-0528-CTD
1200
5-25-80
0634-0650-CTD
0400-5/26
1300
1600
1500
1400-0308
STATION "MB"
0805-0822-CTD
0900
1300
0932-1000-CTD
1105-1203-5/26
38°N
74° W
73° W
72° W
71° W
70° W


41°N
3
OCEANUS VOYAGE # 81 (U.S.G.S.)
WOODS HOLE - SEA
0409 - 5-27-80 - 0338-5-28-80
TIME GMT
1965-0338 STA "N"
5-28-80
1900
1816
1725-1745 CTD
1700
1123-1613 STA. "R"
1100
0957-1022 CTD
0823-0847 CTD
0900
0430
0700
0608
0201
0409-5-27-80
40°N
39°N
71° W
70° W
69° W



42° N
70° W
69° W
68° W
67° W
41° N
40° N
4
OCEANUS VOYAGE #81 (USGS)
WOODS HOLE SEA
0338 MAY 28, 1980 2158 MAY 30, 1980
TIME GMT
SURVEY SITE - 1508 - 2332
STA "K"
0518-0540 CTD
0630-0645 CTD
0600
0700
0400
0740
0835-0905 CTD
0338 28-MAY-80
1200-5/27
1300
1400
0100
0122-0145 CTD
0200
0230-0250 CTD
0010-5-29-80
0320-0400 CTD
1142-5/29-0048 5/30
2112-5/30-2158-5/30
0136
1100
0440-0500 CTD
1745-1948 MUD GRAB
0238-0258 CTD
0540-0556 CTD
1700
1000
0658-0715 CTD
0900
0400-0417 CTD
1505-1535 CTD
1346-1440 CTD
0455-0512 CTD
1239-1318 CTD
0548-0606 CTD
1058-1155 CTD
0401
0839-1005 CTD


5
OCEANUS VOYAGE #81 (USGS)
WOODS HOLE - SEA
2158 MAY 30 1980 ~ 1722 JUNE 1 1980
TIME GMT
71°W
70°W
41°N
69°W
68°W
67°W
40°N
1722 6-1 80 ARRIVAL
WH #1 & #2
1620 C/C
1527 C/C
1500
1408
1300
1200 C/C
1112.5
1100
1000
0924.5
0900
0815
0745
0732
0707
0630 C/C
0600
0512 C/C
0500
0400
0208-0250 BOX CORE
0106 C/C 6/1
2245 2309 BOX CORE
2328 C/C
1939-2103 CTO STA
1600 BEGIN SURVEY
1500 C/C
2158 5/30
2300
2320.5
0000 5/31
1405 C/C
0103 C/C
0958 SIDE SCAN SURVEY
0940 END STA
0353 HT CTO & BOX CORE
0144 C/C
0215 C/C SOUNDING SURVEY
0315 C/C
0330 C/C
0530 C/C
0344 C/C
0424 C/C
0436 C/C
0645 C/C