

#### 4. UNDERWAY GEOPHYSICAL MEASUREMENTS ON THE USNS LYNCH IN SUPPORT OF LEG 78B<sup>1</sup>

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Presented here are the navigation, bathymetry, and underway geophysics for the USNS Lynch Cruise 0705-81 in support of Leg 78B. The primary objectives of this cruise were to deploy, around DSDP Hole 395A, four University of Texas ocean-bottom seismometers (OBS's) designed to record explosives detonations around the site for seismic refraction experiments (Jacobson et al., this volume); to measure near-surface current speed and directions (Boyd, this volume) in order to position the *Glo-mar Challenger* for deploying the borehole seismometer; and to measure bottom currents for coherence studies of acoustic noise (Adair et al., this volume). Other objectives were to obtain bathymetry, seismic reflection profiles, and magnetic profiles during transit runs, and to collect XBT (expendable bathythermograph) and SV-STD (sound velocity, salinity, temperature, density) casts at the site. This chapter describes the results from these studies and the operational schedule aboard the *Lynch*.

The *Lynch* left New London, Connecticut at 1610 GMT on 17 March 1981, enroute to Weapons Station Earle, New Jersey to load explosives, arriving at WS Earle at 1300 GMT the next day and departing at 2100 GMT. It then proceeded to Site 395, deviating somewhat from a great circle route because of inclement weather. The sparker system was deployed and was fully operational at about 1630 GMT on 23 March. Operation continued until 0100 GMT on 25 March, when the 40-kJ switch failed, ending all seismic profiling. The profiles taken were of good quality, but since the terrain was rough, little sediment cover was encountered. For this reason, and because of the short duration of operation, the profiling record is not reproduced here. The *Lynch* arrived at the site at 1800 GMT on 26 March and met the *Glo-mar Challenger*, which was already on station.

After establishing communications with the *Challenger*, the *Lynch* deployed the direct-reading current meters (Boyd, this volume). This phase of operation continued until 0100 GMT on the 28th, at which time a practice seismic refraction profile was conducted to test the recording equipment aboard the *Lynch*. Two bottom current meters were then deployed in the sediment pond where Hole 395A is located. At 2315 GMT on the 28th, the *Challenger* personnel contacted us, relaying the information that the borehole seismometer was in place and appeared to be operating well. Four OBS's were then prepared and deployed within one mile of the hole, and

four seismic refraction lines were shot, beginning at 0925 GMT on the 29th and concluding at 0220 GMT on 30 March. Two SV-STD casts were made from the surface to 4483 corrected meters. A small bathymetric survey was conducted to the south of the site to help fill in gaps in the coverage of the bathymetry completed by Husson et al. (1979). During this time, the remaining explosives were jettisoned. Upon completion of these operations, the *Lynch* returned to the site, recovering the OBS's and current meters.

The *Lynch* left for Port Everglades, Florida at 1630 GMT on 1 April, 1981, with the magnetometer deployed. This transit run required a detour to approach San Juan, Puerto Rico for medical evacuation of a crew member. The ship arrived at Port Everglades at 1300 GMT on 11 April 1981.

The *Lynch*'s tracks during the transit runs are shown in Figure 1, with marks along the track indicating the beginning (GMT) of each day. Figure 2 shows the ship's tracks in the vicinity of the site. The ship's positions were determined in large part using a Magnavox MX-1102 dual-channel satellite receiver, which was generally accurate to within 200 m. This receiver also performed dead reckoning using input from the ship's gyro compass and manual settings of the ship's speed. Table 1 documents the smoothed positions determined by satellites and the positions of significant course and speed changes determined by dead reckoning and listed by time of position fix.

The bathymetry depicted in Figure 3 was digitized from a variety of sources. Records from 12-kHz echo sounders were run at 1-, 2-, and 10-s sweeps; the 3.5-kHz echo sounder was run at a 1-s sweep. The shallowest echoes were digitized and plotted as a function of time in Figure 3. The bathymetry is shown in uncorrected fathoms and kilometers, assuming a vertical sound velocity of 800 fathoms/s (1500 m/s).

The total magnetic field intensity was measured using a proton precession magnetometer towed behind the ship. The magnetometer was deployed at 1330 GMT on 23 March, and was recovered at 1300 GMT on 25 March. During this time, problems with the ink supply on the analog strip chart recorder prevented recording of much of the data. The magnetometer was again deployed during the departure from the site at 1630 GMT on 1 April 1981, and operated continuously until 1850 GMT on 6 April 1981. The portion of the transit run until the detour to San Juan at 1525 GMT on 6 April was conducted parallel to the direction of spreading in this section of the western Atlantic. We did not observe any obvious

<sup>1</sup> Hyndman, R. D., Salisbury, M. H., et al., *Init. Repts. DSDP, 78B*: Washington (U.S. Govt. Printing Office).

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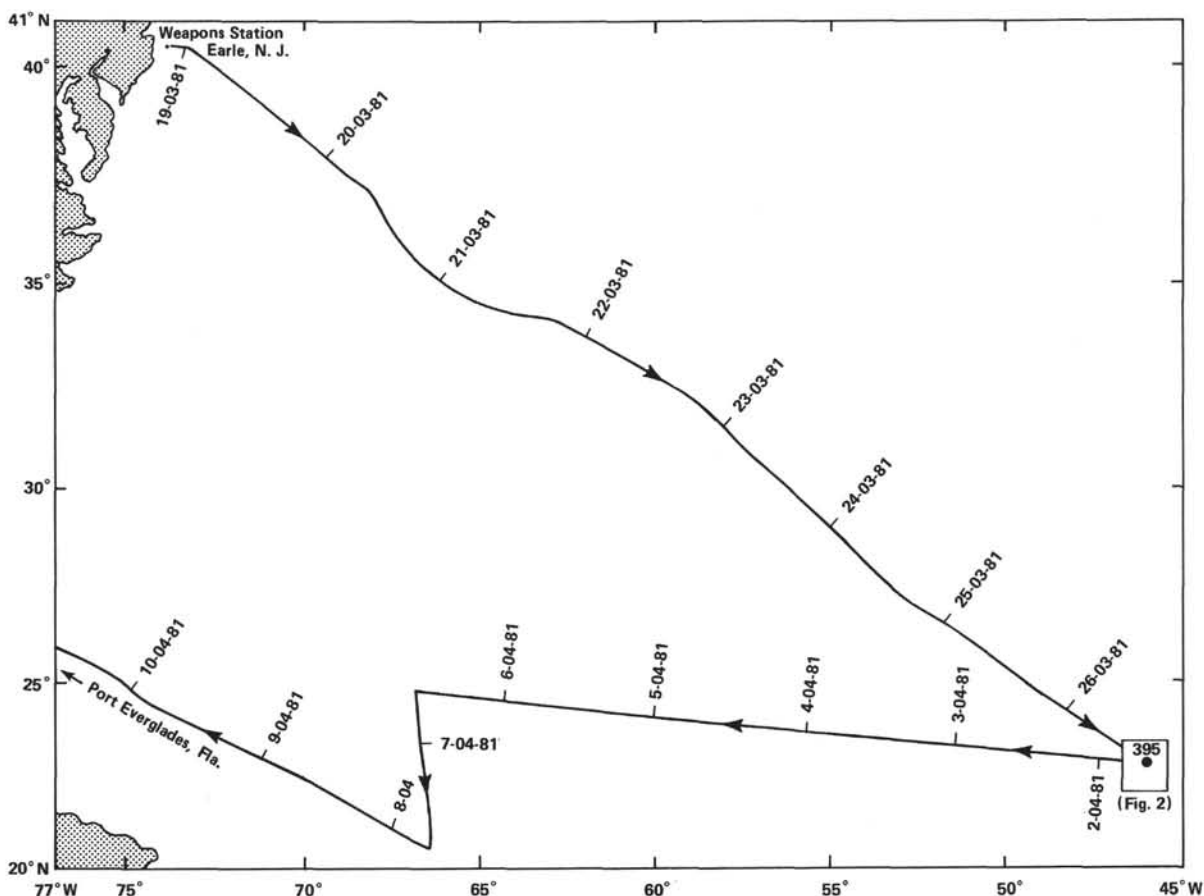


Figure 1. Ship's track, USNS Lynch Cruise 0705-81. Marks along track indicate beginning (GMT) of each day. See Figure 2 for detailed track in vicinity of Site 395.

crossings of fracture zones, possibly making this an important magnetic profile for studies of western Atlantic spreading history.

The magnetic profiles are shown, where available, in Figure 3 below the bathymetry, plotted at the same horizontal time-scale. The magnetics were digitized every half hour and at significant peaks and troughs. A regional trend was removed for each four-day section to emphasize the magnetic anomalies. The section of magnetic data corresponding to the ship's track on the detour to San Juan has a separate regional trend removed. No attempt was made to identify anomalies, since we lacked suitable ship's tracks from other sources to identify and correlate the anomalies.

For more information regarding geophysical measurements around Hole 395A, the reader is referred to Hussong et al. (1979), Rabinowitz et al. (1979), and Purdy et al. (1979).

#### ACKNOWLEDGMENTS

I thank the scientific party on the USNS Lynch, who all stood underway watches and recorded navigation. Special thanks are due to

Roy Burke of NORDA and Walter Allen of NAVOCEANO for keeping the various electronics working. I also wish to thank the deck crew for assisting in the deployment and recovery of the towed instruments. Digitization and plotting were performed by Lou Hemler, Steve Madosik, and Darlene Evans of NORDA, Code 360. This project was funded by a grant from Norda, Code 543. Partial analyses of the data was supported by the School of Oceanography, Oregon State University.

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Date of Initial Receipt: July 12, 1982

Date of Acceptance: June 30, 1983

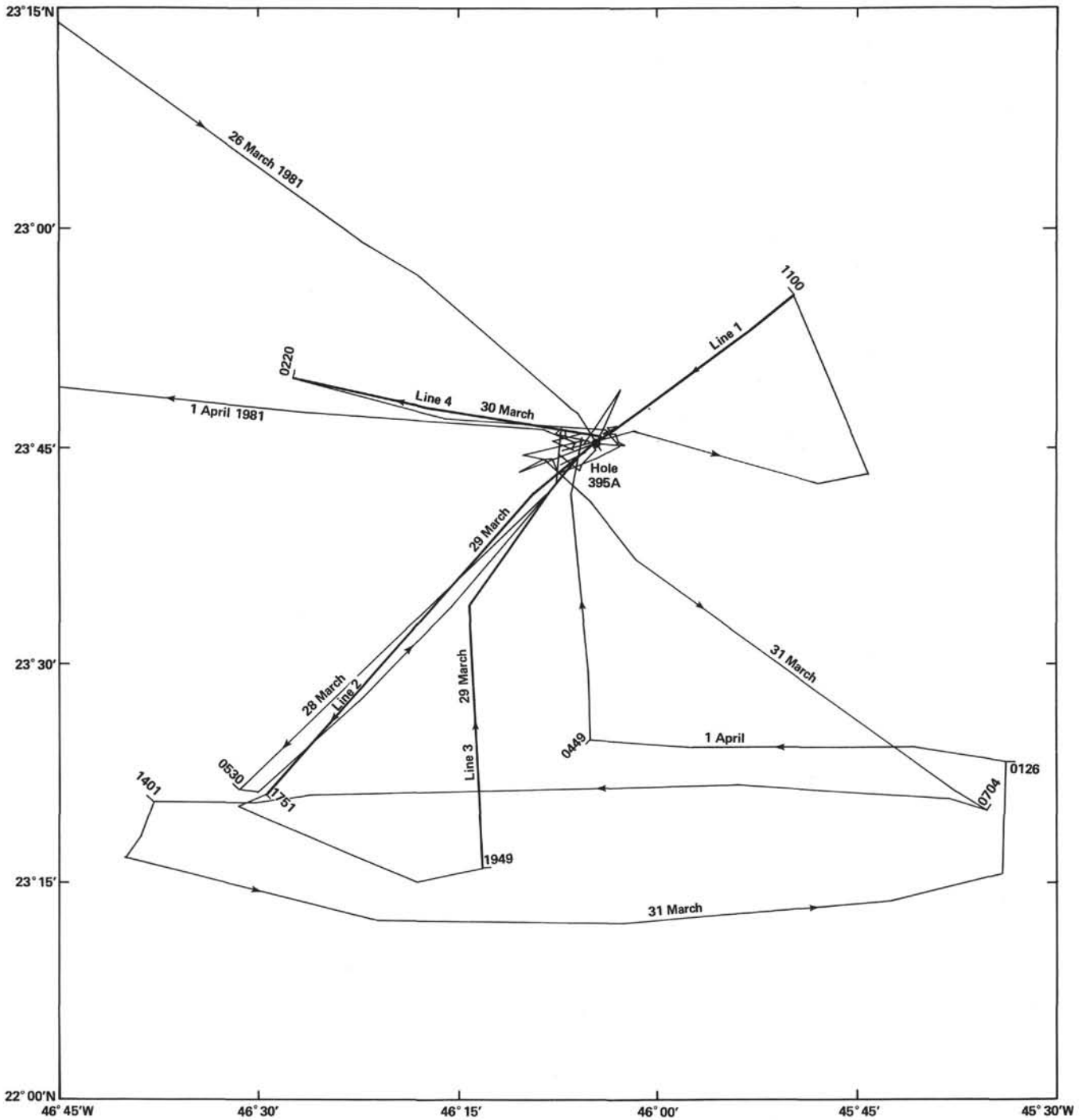


Figure 2. Detail of inset in Figure 1: ship's track for USNS Lynch Cruise 0705-81 in the vicinity of Site 395. Heavy lines (1 through 4) are refraction profiles discussed in Jacobson et al. (this volume).

Table 1. *USNS Lynch* navigation data, Cruise 0705-81.

Day	Month	Year	Time (hours, GMT)	Type <sup>a</sup>	North latitude (degrees min.)	West longitude (degrees min.)	Distance (nautical miles)	Course (degrees)	Speed (knots)	Remarks
19	3	1981	0002	SAT	40 23.01	73 29.49	0.0	0.0	0.0	Enroute to Site 395
19	3	1981	0130	SAT	40 16.08	73 11.91	15.1	117.3	10.3	
19	3	1981	0147	SAT	40 14.90	73 8.94	17.6	117.5	9.0	
19	3	1981	0208	SAT	40 12.21	73 4.87	21.8	130.9	11.7	
19	3	1981	0315	SAT	40 5.51	72 53.16	32.9	126.8	10.0	
19	3	1981	0354	SAT	40 1.48	72 46.55	39.4	128.5	10.0	
19	3	1981	0447	SAT	39 55.71	72 37.01	48.7	128.3	10.5	
19	3	1981	0501	SAT	39 53.64	72 35.51	51.1	150.9	10.1	
19	3	1981	0542	SAT	39 49.76	72 28.43	57.8	125.5	9.8	
19	3	1981	0634	SAT	39 44.74	72 20.11	65.9	128.1	9.4	
19	3	1981	0721	SAT	39 39.31	72 12.69	73.8	133.6	10.1	
19	3	1981	0907	SAT	39 28.90	71 57.68	89.3	132.0	8.8	
19	3	1981	1014	SAT	39 22.18	71 46.88	100.0	128.9	9.6	
19	3	1981	1055	SAT	39 17.75	71 40.73	106.5	133.0	9.5	
19	3	1981	1200	SAT	39 10.97	71 29.71	117.4	128.5	10.1	
19	3	1981	1232	SAT	39 7.80	71 24.29	122.7	127.0	9.9	
19	3	1981	1318	SAT	39 2.80	71 15.95	130.9	127.7	10.7	
19	3	1981	1349	SAT	38 59.75	71 11.00	135.8	128.4	9.5	
19	3	1981	1418	SAT	38 56.87	71 6.89	140.1	132.0	8.9	
19	3	1981	1506	SAT	38 51.69	70 57.87	148.8	126.4	10.9	
19	3	1981	1557	SAT	38 45.82	70 49.24	157.7	131.1	10.5	
19	3	1981	1653	SAT	38 39.59	70 39.91	167.3	130.6	10.3	
19	3	1981	1744	SAT	38 34.04	70 32.43	175.4	133.5	9.5	
19	3	1981	1830	SAT	38 28.96	70 25.21	183.0	132.0	9.9	
19	3	1981	2019	SAT	38 17.29	70 6.61	201.7	128.7	10.3	
19	3	1981	2125	SAT	38 9.85	69 54.76	213.6	128.6	10.8	
19	3	1981	2206	SAT	38 5.24	69 47.58	220.9	129.2	10.7	
20	3	1981	0022	SAT	37 49.19	69 23.38	245.8	130.1	11.0	
20	3	1981	0059	SAT	37 44.76	69 17.24	252.4	132.4	10.7	
20	3	1981	0119	SAT	37 42.43	69 13.98	255.9	132.1	10.4	
20	3	1981	0206	SAT	37 36.92	69 6.44	264.0	132.7	10.4	
20	3	1981	0304	SAT	37 29.89	68 55.68	275.0	129.5	11.4	
20	3	1981	0352	SAT	37 24.34	68 46.64	284.1	127.7	11.3	
20	3	1981	0452	SAT	37 17.14	68 33.19	297.0	124.0	12.9	
20	3	1981	0541	SAT	37 12.01	68 21.28	307.8	118.4	13.2	
20	3	1981	0632	SAT	37 6.13	68 11.44	317.6	126.9	11.5	
20	3	1981	0817	SAT	36 52.56	67 59.12	334.3	144.1	9.6	
20	3	1981	0924	SAT	36 43.23	67 52.00	345.3	148.6	9.8	
20	3	1981	1004	SAT	36 37.67	67 48.80	351.4	155.2	9.2	
20	3	1981	1257	SAT	36 11.55	67 33.55	380.3	154.8	10.0	
20	3	1981	1311	SAT	36 9.57	67 32.01	382.6	147.9	10.0	
20	3	1981	1418	SAT	36 2.32	67 24.99	391.8	142.0	8.2	
20	3	1981	1456	SAT	35 58.60	67 21.17	396.6	140.3	7.6	
20	3	1981	1605	SAT	35 51.37	67 13.80	406.0	140.5	8.2	
20	3	1981	1653	SAT	35 46.32	67 8.17	412.8	137.9	8.5	
20	3	1981	1838	SAT	35 35.21	66 58.05	426.6	143.5	7.9	
20	3	1981	1930	SAT	35 29.97	66 51.98	433.8	136.7	8.3	
20	3	1981	2036	SAT	35 23.66	66 42.97	443.5	130.7	8.8	
20	3	1981	2117	SAT	35 19.99	66 36.85	449.7	126.3	9.1	
20	3	1981	2224	SAT	35 13.01	66 27.86	459.8	133.6	9.1	
21	3	1981	0011	SAT	35 0.60	66 10.75	478.5	131.6	10.5	
21	3	1981	0058	SAT	34 58.39	66 3.42	484.9	110.2	8.2	
21	3	1981	0215	SAT	34 51.48	65 50.76	497.4	123.6	9.7	
21	3	1981	0242	SAT	34 49.12	65 45.74	502.2	119.8	10.6	
21	3	1981	0302	SAT	34 47.64	65 43.04	504.8	123.7	8.0	
21	3	1981	0412	SAT	34 42.48	65 31.84	515.4	119.3	9.0	
21	3	1981	0448	SAT	34 38.85	65 23.66	523.0	118.4	12.7	
21	3	1981	0635	SAT	34 29.85	65 6.14	540.0	122.0	9.5	
21	3	1981	0728	SAT	34 25.44	64 57.76	548.2	122.5	9.3	
21	3	1981	0913	SAT	34 21.24	64 40.47	563.1	106.4	8.5	
21	3	1981	1020	SAT	34 19.33	64 28.35	573.3	100.8	9.1	
21	3	1981	1203	SAT	34 16.20	64 10.18	588.6	101.8	8.9	
21	3	1981	1329	SAT	34 14.16	63 54.97	601.4	99.2	8.9	
21	3	1981	1517	SAT	34 11.19	63 35.51	617.7	100.5	9.1	
21	3	1981	1533	SAT	34 10.83	63 33.03	619.8	100.0	7.8	
21	3	1981	1601	SAT	34 10.07	63 28.38	623.7	101.2	8.4	
21	3	1981	1747	SAT	34 6.26	63 8.11	640.9	102.8	9.7	
21	3	1981	1814	C/C	34 5.36	63 2.94	645.3	101.9	9.7	
21	3	1981	1841	SAT	34 3.57	62 58.75	649.2	117.3	8.7	
21	3	1981	2135	SAT	33 51.70	62 28.08	677.3	115.0	9.7	
21	3	1981	2322	SAT	33 43.94	62 10.92	693.5	118.6	9.1	
21	3	1981	2350	SAT	33 41.99	62 6.22	697.9	116.5	9.4	
22	3	1981	0126	SAT	33 34.76	61 49.76	713.4	117.8	9.7	
22	3	1981	0210	SAT	33 31.48	61 42.41	720.3	118.2	9.5	
22	3	1981	0313	SAT	33 26.23	61 31.83	730.6	120.7	9.8	
22	3	1981	0355	SAT	33 22.71	61 24.07	738.0	118.5	10.5	
22	3	1981	0542	SAT	33 14.10	61 6.46	755.0	120.3	9.6	
22	3	1981	0638	SAT	33 9.36	60 57.18	764.1	121.4	9.7	
22	3	1981	0824	SAT	33 1.20	60 38.43	781.8	117.4	10.0	
22	3	1981	0931	SAT	32 55.88	60 26.56	793.1	118.1	10.1	
22	3	1981	1117	SAT	32 46.85	60 7.92	811.2	120.0	10.2	
22	3	1981	1242	SAT	32 39.20	59 53.86	825.3	122.9	9.9	
22	3	1981	1509	SAT	32 24.70	59 29.78	850.2	125.5	10.2	
22	3	1981	1656	SAT	32 14.74	59 13.24	867.4	124.5	9.8	
22	3	1981	2234	SAT	31 43.47	58 21.26	921.5	129.2	9.6	
23	3	1981	0026	SAT	31 30.17	58 7.14	939.4	137.9	9.6	
23	3	1981	0211	SAT	31 16.87	57 54.15	956.8	140.2	9.9	
23	3	1981	0303	SAT	31 10.57	57 47.66	965.1	138.6	9.7	
23	3	1981	0410	SAT	31 2.63	57 38.87	976.1	136.5	9.8	
23	3	1981	0449	SAT	30 58.25	57 33.92	982.2	135.9	9.4	
23	3	1981	0548	SAT	30 51.50	57 26.16	991.7	135.4	9.6	
23	3	1981	0734	SAT	30 39.30	57 12.14	1008.8	135.4	9.7	
23	3	1981	0841	SAT	30 31.92	57 2.26	1020.1	130.9	10.1	
23	3	1981	0920	SAT	30 27.40	56 56.96	1026.5	134.7	9.9	
23	3	1981	1027	SAT	30 19.83	56 50.15	1036.1	142.2	8.6	
23	3	1981	1134	SAT	30 12.12	56 40.70	1047.3	133.4	10.1	
23	3	1981	1237	C/C	30 5.33	56 31.58	1057.7	130.7	9.9	
23	3	1981	1326	C/C	30 8.53	56 29.75	1061.3	26.3	4.4	
23	3	1981	1340	SAT	30 7.84	56 28.48	1062.6	122.1	5.6	

UNDERWAY GEOPHYSICAL MEASUREMENTS

Table 1. (Continued).

Day	Month	Year	Time (hours, GMT)	Type <sup>a</sup>	North latitude (degrees min.)	West longitude (degrees min.)	Distance (nautical miles)	Course (degrees)	Speed (knots)	Remarks
23	3	1981	1418	SAT	30 3.39	56 23.35	1068.9	135.1	9.9	
23	3	1981	1504	SAT	29 57.66	56 16.48	1077.1	133.9	10.8	
23	3	1981	1527	SAT	29 54.87	56 13.37	1081.0	136.0	10.1	
23	3	1981	1851	SAT	29 30.42	55 49.38	1113.1	139.6	9.4	
23	3	1981	2037	SAT	29 17.90	55 30.90	1133.5	127.9	11.5	
23	3	1981	2145	SAT	29 10.04	55 21.26	1145.0	133.1	10.2	
23	3	1981	2331	SAT	28 57.54	55 7.58	1162.3	136.3	9.8	
24	3	1981	0102	SAT	28 46.90	54 56.11	1177.0	136.6	9.6	
24	3	1981	0134	SAT	28 43.28	54 52.20	1182.0	136.6	9.3	
24	3	1981	0210	SAT	28 39.48	54 47.63	1187.5	133.5	9.2	
24	3	1981	0320	SAT	28 31.80	54 38.05	1198.9	132.4	9.8	
24	3	1981	0356	SAT	28 28.09	54 33.50	1204.3	132.9	9.1	
24	3	1981	0543	SAT	28 16.50	54 19.50	1221.2	133.3	9.5	
24	3	1981	0643	SAT	28 10.04	54 11.42	1230.8	132.2	9.6	
24	3	1981	0830	SAT	27 58.78	53 57.46	1247.5	132.4	9.4	
24	3	1981	0936	SAT	27 51.30	53 49.21	1258.0	135.7	9.5	
24	3	1981	1124	SAT	27 39.92	53 35.37	1274.7	132.9	9.3	
24	3	1981	1212	SAT	27 34.76	53 29.12	1282.3	133.0	9.5	
24	3	1981	1252	SAT	27 30.58	53 24.35	1288.2	134.7	8.9	
24	3	1981	1358	SAT	27 23.81	53 16.66	1297.8	134.8	8.7	
24	3	1981	1439	SAT	27 19.59	53 11.48	1304.1	132.5	9.1	
24	3	1981	1603	C/C	27 10.81	53 1.41	1316.6	134.4	9.0	
24	3	1981	1659	SAT	27 5.88	52 53.45	1325.2	124.8	9.2	
24	3	1981	1801	SAT	27 0.65	52 44.83	1334.5	124.3	9.0	
24	3	1981	1949	SAT	26 51.89	52 30.07	1350.3	123.7	8.8	
24	3	1981	2056	SAT	26 46.48	52 20.65	1360.3	122.8	9.0	
24	3	1981	2243	SAT	26 37.80	52 5.01	1376.8	121.9	9.2	
24	3	1981	2354	SAT	26 32.11	51 54.57	1387.7	121.4	9.2	
25	3	1981	0045	SAT	26 28.10	51 47.46	1395.2	122.2	8.8	
25	3	1981	0139	SAT	26 23.71	51 39.76	1403.4	122.5	9.1	
25	3	1981	0158	C/C	26 22.21	51 36.87	1406.4	120.1	9.4	
25	3	1981	0302	SAT	26 16.65	51 27.92	1416.2	124.7	9.2	
25	3	1981	0450	SAT	26 7.94	51 12.44	1432.6	122.1	9.1	
25	3	1981	0553	SAT	26 2.76	51 2.96	1442.5	121.3	9.5	
25	3	1981	0739	SAT	25 51.89	50 49.08	1459.1	131.1	9.4	
25	3	1981	0847	SAT	25 44.68	50 40.16	1469.9	131.9	9.5	
25	3	1981	1033	SAT	25 33.84	50 26.04	1486.6	130.4	9.5	
25	3	1981	1105	SAT	25 30.47	50 21.62	1491.8	130.2	9.8	
25	3	1981	1204	SAT	25 24.79	50 13.26	1501.3	127.0	9.6	
25	3	1981	1251	SAT	25 20.58	50 7.00	1508.3	126.7	9.0	
25	3	1981	1306	C/C	25 18.17	50 5.38	1511.1	148.7	11.3	
25	3	1981	1342	C/C	25 15.64	50 5.19	1513.7	176.1	4.2	
25	3	1981	1422	SAT	25 14.92	49 58.85	1519.4	97.2	8.7	
25	3	1981	1537	SAT	25 8.74	49 48.64	1530.6	123.8	8.9	
25	3	1981	1608	SAT	25 6.27	49 44.25	1535.2	121.9	9.1	
25	3	1981	1900	SAT	24 48.36	49 18.42	1564.7	127.4	10.3	
25	3	1981	2008	SAT	24 41.42	49 6.34	1577.7	122.3	11.5	
25	3	1981	2154	SAT	24 32.02	48 51.29	1594.3	124.5	9.4	
25	3	1981	2247	SAT	24 27.29	48 43.59	1602.8	124.0	9.6	
25	3	1981	2356	SAT	24 20.93	48 34.10	1613.5	126.4	9.3	
26	3	1981	0210	SAT	24 8.46	48 14.89	1635.0	125.4	9.6	
26	3	1981	0357	SAT	23 58.88	47 59.51	1652.0	124.3	9.5	
26	3	1981	0504	SAT	23 53.29	47 50.17	1662.2	123.2	9.1	
26	3	1981	0650	SAT	23 43.97	47 35.18	1678.8	124.2	9.4	
26	3	1981	0758	SAT	23 37.56	47 25.55	1689.7	126.0	9.6	
26	3	1981	0837	SAT	23 34.15	47 20.10	1695.7	124.3	9.3	
26	3	1981	0944	SAT	23 27.93	47 10.52	1706.5	125.3	9.6	
26	3	1981	1143	SAT	23 17.63	46 52.07	1726.3	121.3	10.0	
26	3	1981	1303	SAT	23 11.09	46 40.43	1738.8	121.4	9.4	
26	3	1981	1349	C/C	23 6.99	46 34.14	1745.9	125.3	9.2	
26	3	1981	1516	SAT	22 59.39	46 22.49	1759.1	125.3	9.1	
26	3	1981	1543	C/C	22 56.95	46 18.20	1763.7	121.7	10.3	
26	3	1981	1721	C/C	22 47.61	46 6.51	1778.0	130.9	8.7	
26	3	1981	1731	C/C	22 47.40	46 6.12	1778.4	120.3	2.5	
26	3	1981	1811	SAT	22 45.63	46 4.95	1780.5	148.6	3.1	Arrive Site 395
26	3	1981	1918	SAT	22 45.75	46 4.66	1780.8	65.8	0.3	
26	3	1981	1957	SAT	22 45.76	46 4.30	1781.1	88.3	0.5	
26	3	1981	2106	SAT	22 45.93	46 3.91	1781.5	64.7	0.3	Deploy shallow current meters
26	3	1981	2252	SAT	22 45.90	46 3.31	1782.0	93.1	0.3	
26	3	1981	2323	SAT	22 45.95	46 3.19	1782.2	65.7	0.2	
27	3	1981	0052	SAT	22 45.46	46 2.99	1782.7	159.4	0.4	
27	3	1981	0239	SAT	22 45.21	46 2.58	1783.1	123.5	0.3	
27	3	1981	0304	SAT	22 45.30	46 4.60	1785.0	272.8	4.5	
27	3	1981	0451	SAT	22 44.95	46 4.60	1785.3	180.0	0.2	
27	3	1981	0600	SAT	22 44.48	46 4.81	1785.9	202.4	0.4	
27	3	1981	0746	SAT	22 43.83	46 5.73	1786.9	232.5	0.6	
27	3	1981	0854	SAT	22 44.92	46 4.62	1788.4	43.2	1.3	
27	3	1981	1041	SAT	22 44.76	46 5.67	1789.4	260.6	0.6	
27	3	1981	1214	SAT	22 44.83	46 6.49	1790.2	275.3	0.5	
27	3	1981	1401	SAT	22 45.55	46 5.96	1791.0	34.2	0.5	
27	3	1981	1424	SAT	22 45.50	46 5.37	1791.6	95.3	1.4	
27	3	1981	1610	SAT	22 45.74	46 5.69	1792.0	309.1	0.2	
27	3	1981	1721	SAT	22 45.57	46 5.82	1792.2	215.2	0.2	
27	3	1981	1908	SAT	22 45.18	46 5.58	1792.6	150.4	0.3	
27	3	1981	2016	SAT	22 44.78	46 5.89	1793.1	215.6	0.4	
27	3	1981	2203	SAT	22 48.98	46 2.80	1798.2	34.1	2.8	
28	3	1981	0000	SAT	22 45.07	46 4.72	1802.5	204.4	2.2	
28	3	1981	0146	SAT	22 43.76	46 7.48	1805.3	242.8	1.6	Test refraction gear
28	3	1981	0212	SAT	22 42.39	46 7.74	1806.7	189.9	3.2	
28	3	1981	0358	SAT	22 30.68	46 20.74	1823.5	225.7	9.5	
28	3	1981	0530	C/C	22 21.37	46 31.49	1837.1	226.9	8.9	
28	3	1981	0542	C/C	22 21.25	46 29.99	1838.5	94.9	7.0	
28	3	1981	0656	SAT	22 27.18	46 22.80	1847.4	48.3	7.2	
28	3	1981	0805	SAT	22 33.77	46 15.88	1856.6	44.1	8.0	
28	3	1981	0951	SAT	22 44.48	46 5.89	1870.7	40.7	8.0	
28	3	1981	1113	SAT	22 44.64	46 5.66	1871.0	53.0	0.2	Deploy bottom current meters and OBS array
28	3	1981	1258	SAT	22 44.84	46 4.33	1872.2	80.7	0.7	
28	3	1981	1312	SAT	22 45.99	46 5.23	1873.7	324.2	6.1	
28	3	1981	1332	SAT	22 46.32	46 5.94	1874.4	296.8	2.2	

Table 1. (Continued).

Day	Month	Year	Time (hours, GMT)	Type <sup>a</sup>	North latitude (degrees min.)	West longitude (degrees min.)	Distance (nautical miles)	Course (degrees)	Speed (knots)	Remarks
28	3	1981	1458	SAT	22 46.36	46 3.78	1876.7	339.8	0.5	
28	3	1981	1518	SAT	22 46.50	46 2.92	1877.5	80.0	2.4	
28	3	1981	1819	SAT	22 45.96	46 5.81	1880.3	281.1	1.3	
28	3	1981	1927	SAT	22 45.71	46 6.76	1881.3	254.1	0.8	
28	3	1981	2005	SAT	22 45.45	46 7.87	1882.3	255.7	1.7	
28	3	1981	2114	SAT	22 44.66	46 5.85	1884.3	113.0	1.8	
28	3	1981	2252	SAT	22 44.39	46 6.06	1884.7	215.7	0.2	
29	3	1981	0037	SAT	22 44.38	46 5.67	1885.0	91.6	0.2	
29	3	1981	0101	SAT	22 44.09	46 5.59	1885.3	165.7	0.7	
29	3	1981	0120	SAT	22 43.39	46 5.87	1886.1	200.3	2.4	
29	3	1981	0248	SAT	22 44.58	46 7.45	1888.0	309.2	1.3	
29	3	1981	0306	SAT	22 44.74	46 7.24	1888.2	50.4	0.8	
29	3	1981	0608	SAT	22 46.13	46 1.88	1893.3	74.3	1.7	
29	3	1981	0754	SAT	22 42.52	45 48.12	1906.5	105.9	7.5	
29	3	1981	0901	SAT	22 43.24	45 44.21	1910.2	78.7	3.3	
29	3	1981	1151	SAT	22 55.39	45 49.86	1923.4	336.8	4.7	Conduct refraction
29	3	1981	1223	SAT	22 52.48	45 53.89	1928.2	231.9	8.8	shooting
29	3	1981	1335	SAT	22 46.53	46 2.96	1938.4	234.6	8.6	
29	3	1981	1410	SAT	22 43.36	46 7.28	1943.5	231.5	8.7	
29	3	1981	1426	SAT	22 41.66	46 9.46	1946.1	229.8	9.9	
29	3	1981	1612	SAT	22 29.73	46 21.00	1962.1	221.8	9.1	
29	3	1981	1729	SAT	22 21.20	46 29.20	1973.5	221.6	8.9	
29	3	1981	1751	C/C	22 20.23	46 31.55	1975.9	245.9	6.5	
29	3	1981	1916	SAT	22 15.12	46 18.10	1989.4	112.3	9.5	
29	3	1981	1939	C/C	22 14.19	46 14.70	—	120.0	7.6	
29	3	1981	1949	C/C	22 13.81	46 13.89	—	355.0	7.6	
29	3	1981	2025	SAT	22 19.12	46 13.30	1995.4	48.0	5.2	
29	3	1981	2211	SAT	22 34.15	46 14.19	2010.4	356.9	8.5	
29	3	1981	2330	SAT	22 42.55	46 7.69	2020.7	35.5	7.8	
30	3	1981	0013	SAT	22 46.20	46 7.22	2024.4	6.8	5.1	
30	3	1981	0115	SAT	22 47.83	46 18.08	2034.5	279.2	9.8	
30	3	1981	0159	SAT	22 49.26	46 25.38	2041.4	282.0	9.4	
30	3	1981	0214	SAT	22 49.74	46 27.51	2043.4	283.7	8.1	
30	3	1981	0401	SAT	22 47.04	46 16.03	2054.4	104.3	6.1	Conduct SV-STD
30	3	1981	0518	SAT	22 46.25	46 4.04	2065.5	94.1	8.6	casts
30	3	1981	0705	SAT	22 45.12	46 2.91	2067.0	137.3	0.9	
30	3	1981	0813	SAT	22 44.41	46 4.32	2068.5	241.4	1.3	
30	3	1981	0959	SAT	22 43.59	46 6.50	2070.6	247.8	1.2	
30	3	1981	1042	SAT	22 43.17	46 7.40	2071.6	243.2	1.3	
30	3	1981	1134	SAT	22 44.30	46 8.08	2072.9	331.0	1.5	
30	3	1981	1521	SAT	22 44.14	46 8.84	2073.6	257.1	0.2	
30	3	1981	1639	SAT	22 43.33	46 10.35	2075.2	239.8	1.2	
30	3	1981	1826	SAT	22 45.19	46 5.17	2080.3	68.7	2.9	
30	3	1981	1935	SAT	22 45.19	46 4.91	2080.6	90.0	0.2	
30	3	1981	2012	SAT	22 44.63	46 4.48	2081.2	144.7	1.1	
30	3	1981	2122	SAT	22 45.12	46 4.94	2081.9	319.1	0.6	
30	3	1981	2222	SAT	22 45.77	46 5.12	2082.6	345.7	0.7	
30	3	1981	2324	SAT	22 45.41	46 6.11	2083.5	248.5	0.9	
31	3	1981	0007	SAT	22 44.52	46 10.20	2087.4	256.7	5.4	
31	3	1981	0122	SAT	22 44.16	46 8.45	2089.1	102.6	1.3	
31	3	1981	0236	C/C	22 41.22	46 5.02	2093.4	132.9	3.5	
31	3	1981	0308	SAT	22 37.44	46 1.77	2098.2	141.6	9.0	Survey south of
31	3	1981	0615	SAT	22 23.21	45 40.45	2122.5	125.8	7.8	Site 395
31	3	1981	0632	C/C	22 22.04	45 38.68	2124.5	125.6	7.1	
31	3	1981	0704	C/C	22 20.10	45 35.23	2128.3	121.3	7.0	
31	3	1981	0724	SAT	22 20.89	45 37.90	2130.9	287.7	7.8	
31	3	1981	0802	SAT	22 21.17	45 43.51	2136.1	273.1	8.2	
31	3	1981	0909	SAT	22 21.83	45 53.77	2145.6	274.0	8.5	
31	3	1981	1120	SAT	22 21.41	46 14.17	2164.4	268.7	8.6	
31	3	1981	1232	SAT	22 21.15	46 25.46	2174.9	268.6	8.7	
31	3	1981	1305	SAT	22 20.53	46 30.37	2179.5	262.2	8.3	
31	3	1981	1401	C/C	22 20.50	46 37.87	2186.4	269.8	7.4	
31	3	1981	1419	SAT	22 17.92	46 38.94	2189.2	201.0	9.2	
31	3	1981	1429	SAT	22 16.73	46 39.88	2190.6	216.2	8.8	
31	3	1981	1737	SAT	22 12.46	46 21.10	2208.5	103.8	5.7	
31	3	1981	1924	SAT	22 12.35	46 9.18	2219.6	90.6	6.2	
31	3	1981	2033	SAT	22 12.44	46 0.66	2227.5	89.3	6.9	
31	3	1981	2219	SAT	22 13.54	45 47.78	2239.4	84.7	6.8	
31	3	1981	2259	SAT	22 13.79	45 42.65	2244.2	87.0	7.1	
1	4	1981	0022	SAT	22 15.67	45 34.17	2252.3	76.5	5.8	
1	4	1981	0044	SAT	22 18.49	45 34.03	2255.1	2.6	7.7	
1	4	1981	0126	C/C	22 23.35	45 33.86	2260.0	1.9	6.9	
1	4	1981	0208	SAT	22 24.40	45 40.75	2266.4	279.4	9.2	
1	4	1981	0403	SAT	22 24.38	45 58.06	2282.4	269.9	8.3	
1	4	1981	0449	C/C	22 24.92	46 5.15	2289.0	274.7	8.6	
1	4	1981	0526	SAT	22 29.87	46 5.32	2293.9	358.2	8.0	
1	4	1981	0712	SAT	22 41.96	46 6.51	2306.1	354.8	6.9	
1	4	1981	0820	SAT	22 45.57	46 5.74	2309.8	11.1	3.2	Recover OBS array
1	4	1981	1007	SAT	22 45.93	46 7.69	2311.6	281.3	1.0	and current
1	4	1981	1143	SAT	22 46.27	46 7.36	2312.0	41.8	0.3	meters
1	4	1981	1158	SAT	22 46.22	46 8.58	2313.2	267.5	4.5	
1	4	1981	1330	SAT	22 45.30	46 6.03	2315.7	111.4	1.6	
1	4	1981	1523	SAT	22 45.54	46 5.70	2316.1	51.7	0.2	
1	4	1981	1649	SAT	22 46.18	46 7.27	2320.4	278.6	9.1	Enroute to Port
1	4	1981	1834	SAT	22 47.44	46 25.95	2337.6	274.2	9.9	Everglades,
1	4	1981	1943	SAT	22 48.39	46 37.70	2348.5	275.0	9.5	Fla.
1	4	1981	2130	SAT	22 49.58	46 52.74	2362.4	274.9	7.8	
1	4	1981	2334	SAT	22 51.48	47 13.24	2381.4	275.7	9.2	
2	4	1981	0120	SAT	22 52.95	47 31.28	2398.1	275.1	9.4	
2	4	1981	0310	SAT	22 54.35	47 50.43	2415.8	274.5	9.7	
2	4	1981	0623	SAT	22 56.37	48 24.46	2447.2	273.7	9.8	
2	4	1981	0732	SAT	22 57.72	48 36.97	2458.8	276.7	10.1	
2	4	1981	0810	SAT	22 58.56	48 43.68	2465.0	277.7	9.8	
2	4	1981	0918	SAT	23 0.26	48 55.79	2476.3	278.7	10.0	
2	4	1981	1049	SAT	23 1.99	49 12.22	2491.5	276.5	10.0	
2	4	1981	1106	SAT	23 2.33	49 15.20	2494.3	277.1	9.8	
2	4	1981	1235	SAT	23 4.95	49 30.82	2508.9	280.3	9.8	
2	4	1981	1616	SAT	23 10.70	50 9.31	2544.8	279.2	9.7	
2	4	1981	1744	SAT	23 11.86	50 24.68	2558.9	274.7	9.7	



Table 1. (Continued).

Day	Month	Year	Time (hours, GMT)	Type <sup>a</sup>	North latitude (degrees min.)	West longitude (degrees min.)	Distance (nautical miles)	Course (degrees)	Speed (knots)	Remarks
2	4	1981	1931	SAT	23 13.39	50 43.98	2576.7	274.9	10.0	
2	4	1981	2040	SAT	23 14.85	50 56.56	2588.4	277.2	10.1	
2	4	1981	2226	SAT	23 16.76	51 12.94	2603.6	277.2	8.6	
3	4	1981	0031	SAT	23 18.73	51 34.94	2623.9	275.6	9.7	
3	4	1981	0200	SAT	23 19.46	51 50.50	2638.2	272.9	9.6	
3	4	1981	0218	SAT	23 19.57	51 53.54	2641.0	272.3	9.3	
3	4	1981	0405	SAT	23 19.50	52 12.01	2657.9	269.8	9.5	
3	4	1981	0534	SAT	23 21.04	52 27.95	2672.6	276.0	9.9	
3	4	1981	0720	SAT	23 23.15	52 46.31	2689.6	277.2	9.5	
3	4	1981	0829	SAT	23 24.31	52 58.25	2700.7	276.0	9.6	
3	4	1981	1016	SAT	23 27.23	53 16.67	2717.8	279.8	9.6	
3	4	1981	1127	SAT	23 28.72	53 29.08	2729.3	277.5	9.7	
3	4	1981	1152	SAT	23 29.06	53 33.35	2733.2	275.0	9.4	
3	4	1981	1312	SAT	23 29.36	53 46.97	2745.7	271.4	9.4	
3	4	1981	1339	SAT	23 29.35	53 51.60	2750.0	269.9	9.4	
3	4	1981	1525	SAT	23 29.39	54 10.13	2767.0	270.1	9.6	
3	4	1981	1842	SAT	23 33.19	54 44.51	2798.7	276.9	9.7	
3	4	1981	1951	SAT	23 34.94	54 56.99	2810.3	278.7	10.1	
3	4	1981	2028	SAT	23 35.65	55 3.46	2816.2	276.8	9.7	
3	4	1981	2138	SAT	23 37.54	55 15.88	2827.8	279.4	9.9	
3	4	1981	2307	SAT	23 39.56	55 31.47	2842.2	278.1	9.7	
4	4	1981	0052	SAT	23 42.22	55 50.32	2859.7	278.8	10.0	
4	4	1981	0128	SAT	23 43.05	55 56.71	2865.6	278.1	9.8	
4	4	1981	0313	SAT	23 44.75	56 16.35	2883.6	275.4	10.3	
4	4	1981	0631	SAT	23 47.99	56 53.55	2917.8	275.4	10.4	
4	4	1981	0741	SAT	23 49.39	57 6.49	2929.8	276.7	10.2	
4	4	1981	0818	SAT	23 50.08	57 13.17	2935.9	276.4	10.0	
4	4	1981	1204	SAT	23 53.05	57 53.15	2972.6	274.6	9.7	
4	4	1981	1250	SAT	23 53.77	58 1.21	2980.0	275.6	9.7	
4	4	1981	1349	SAT	23 54.93	58 11.26	2989.3	277.2	9.4	
4	4	1981	1433	SAT	23 55.46	58 18.70	2996.1	274.5	9.3	
4	4	1981	1752	SAT	23 58.51	58 53.89	3028.4	275.4	9.7	
4	4	1981	1938	SAT	23 59.19	59 13.72	3046.5	272.1	10.3	
4	4	1981	2048	SAT	23 59.85	59 27.01	3058.7	273.1	10.4	
4	4	1981	2235	SAT	24 1.80	59 47.19	3077.2	276.0	10.4	
4	4	1981	2344	SAT	24 3.09	59 59.67	3088.7	276.5	10.0	
5	4	1981	0041	SAT	24 4.15	60 9.87	3098.1	276.5	9.9	
5	4	1981	0129	SAT	24 4.93	60 18.31	3105.8	275.8	9.7	
5	4	1981	0221	SAT	24 5.87	60 27.39	3114.1	276.5	9.6	
5	4	1981	0408	SAT	24 7.83	60 46.43	3131.6	276.4	9.8	
5	4	1981	0542	SAT	24 9.23	61 3.25	3147.0	275.2	9.8	
5	4	1981	0728	SAT	24 11.87	61 21.90	3164.3	278.8	9.7	
5	4	1981	0838	SAT	24 13.33	61 34.15	3175.5	277.4	9.7	
5	4	1981	1024	SAT	24 15.37	61 52.88	3192.7	276.8	9.7	
5	4	1981	1242	SAT	24 17.53	62 17.83	3215.6	275.4	9.9	
5	4	1981	1426	SAT	24 18.85	62 36.33	3232.5	274.5	9.8	
5	4	1981	1849	SAT	24 23.67	63 22.82	3275.1	276.5	9.7	
5	4	1981	2035	SAT	24 25.71	63 40.67	3291.5	277.2	9.3	
5	4	1981	2331	SAT	24 30.29	64 9.79	3318.4	279.8	9.2	
5	4	1981	2353	SAT	24 31.15	64 13.58	3322.0	284.0	9.7	
6	4	1981	0022	SAT	24 31.23	64 18.28	3326.2	271.1	8.8	
6	4	1981	0138	SAT	24 32.58	64 31.36	3338.2	276.5	9.5	
6	4	1981	0207	SAT	24 32.94	64 36.31	3342.7	274.6	9.3	
6	4	1981	0326	SAT	24 32.81	64 49.52	3354.7	269.4	9.1	
6	4	1981	0639	SAT	24 33.76	65 21.47	3383.8	271.9	9.0	
6	4	1981	0826	SAT	24 34.90	65 38.98	3399.8	274.1	9.0	
6	4	1981	0934	SAT	24 36.13	65 50.57	3410.4	276.7	9.4	
6	4	1981	1122	SAT	24 38.06	66 8.78	3427.1	276.6	9.3	
6	4	1981	1318	SAT	24 41.09	66 29.17	3445.8	279.3	9.7	
6	4	1981	1434	SAT	24 43.04	66 41.35	3457.1	280.0	8.9	
6	4	1981	1446	SAT	24 43.44	66 43.45	3459.0	281.8	9.7	
6	4	1981	1524	C/C	24 43.58	66 48.29	3463.4	271.8	6.9	
6	4	1981	1621	SAT	24 35.15	66 48.48	3471.8	181.2	8.9	
6	4	1981	1759	SAT	24 20.04	66 46.69	3487.0	173.8	9.3	
6	4	1981	1946	SAT	24 4.35	66 45.36	3502.8	175.6	8.8	
6	4	1981	2056	SAT	23 55.31	66 45.44	3511.8	180.5	7.7	
6	4	1981	2243	SAT	23 38.73	66 44.76	3528.4	177.9	9.3	
6	4	1981	2314	SAT	23 33.60	66 43.92	3533.6	171.5	10.0	
7	4	1981	0050	SAT	23 17.58	66 42.05	3549.7	173.9	10.1	
7	4	1981	0223	SAT	23 2.07	66 40.25	3565.3	173.9	10.1	
7	4	1981	0236	SAT	22 59.90	66 39.84	3567.5	170.1	10.2	
7	4	1981	0409	SAT	22 45.14	66 36.34	3582.6	167.7	9.7	
7	4	1981	0550	SAT	22 29.24	66 32.72	3598.9	168.1	9.7	
7	4	1981	0704	C/C	22 17.51	66 30.33	3610.8	169.3	9.7	
7	4	1981	0736	SAT	22 11.98	66 29.38	3616.4	171.0	10.5	
7	4	1981	0845	SAT	22 0.03	66 27.90	3628.4	173.5	10.5	
7	4	1981	0923	SAT	21 53.57	66 27.33	3634.9	175.3	10.2	
7	4	1981	1031	SAT	21 41.68	66 26.45	3646.8	176.1	10.5	
7	4	1981	1212	SAT	21 24.04	66 26.21	3664.5	179.3	10.5	
7	4	1981	1530	SAT	20 49.63	66 25.34	3698.9	178.6	10.4	
7	4	1981	1724	C/C	20 32.60	66 22.86	3716.1	172.2	9.0	
7	4	1981	1858	SAT	20 37.74	66 38.61	3731.7	289.2	10.0	
7	4	1981	2008	SAT	20 42.39	66 49.57	3743.0	294.4	9.7	
7	4	1981	2044	SAT	20 44.67	66 55.29	3748.8	293.1	9.7	
7	4	1981	2350	SAT	20 59.98	67 24.92	3780.4	298.9	10.2	
8	4	1981	0135	SAT	21 9.31	67 40.13	3797.4	303.3	9.7	
8	4	1981	0146	SAT	21 10.29	67 41.75	3799.2	303.0	9.8	
8	4	1981	0316	SAT	21 18.03	67 54.46	3813.3	303.2	9.4	
8	4	1981	0334	SAT	21 19.67	67 57.08	3816.3	303.9	9.8	
8	4	1981	0504	SAT	21 27.31	68 10.68	3831.1	301.1	9.9	
8	4	1981	0608	C/C	21 32.81	68 20.77	3842.0	300.4	10.2	
8	4	1981	0646	SAT	21 35.97	68 27.16	3848.7	298.0	10.6	
8	4	1981	0833	SAT	21 45.05	68 43.97	3866.8	300.2	10.1	
8	4	1981	0942	SAT	21 51.42	68 54.95	3878.8	302.0	10.5	
8	4	1981	1129	SAT	22 1.38	69 11.37	3897.0	303.2	10.2	
8	4	1981	1249	SAT	22 8.29	69 24.31	3910.8	300.0	10.4	
8	4	1981	1309	SAT	22 9.98	69 27.55	3914.3	299.4	10.3	
8	4	1981	1456	SAT	22 18.36	69 45.05	3932.5	297.4	10.2	
8	4	1981	1624	SAT	22 25.12	69 59.45	3947.4	296.9	10.2	
8	4	1981	1808	SAT	22 31.78	70 14.72	3963.0	295.3	9.0	

Table 1. (Continued).

Day	Month	Year	Time (hours, GMT)	Type <sup>a</sup>	North latitude (degrees min.)	West longitude (degrees min.)	Distance (nautical miles)	Course (degrees)	Speed (knots)	Remarks
8	4	1981	1954	SAT	22 38.09	70 30.59	3979.0	293.3	9.0	
8	4	1981	2105	SAT	22 42.89	70 40.26	3989.1	298.3	8.6	
8	4	1981	2251	SAT	22 49.08	70 57.54	4006.2	291.2	9.7	
9	4	1981	0028	SAT	22 56.90	71 12.40	4022.0	299.7	9.8	
9	4	1981	0059	SAT	23 0.12	71 16.43	4026.9	311.0	9.5	
9	4	1981	0213	SAT	23 5.88	71 28.51	4039.4	297.4	10.2	
9	4	1981	0245	SAT	23 8.75	71 33.18	4044.6	303.8	9.7	
9	4	1981	0412	SAT	23 15.87	71 46.79	4059.0	299.6	9.9	
9	4	1981	0558	SAT	23 25.28	72 3.54	4077.0	301.5	10.2	
9	4	1981	0633	C/C	23 28.35	72 8.99	4082.9	301.5	10.1	
9	4	1981	0744	SAT	23 34.06	72 19.98	4094.4	299.5	9.8	
9	4	1981	0854	SAT	23 38.51	72 31.14	4105.6	293.5	9.6	
9	4	1981	1040	SAT	23 44.39	72 48.82	4122.8	290.0	9.7	
9	4	1981	1140	SAT	23 48.36	72 58.41	4132.5	294.3	9.6	
9	4	1981	1326	SAT	23 54.94	73 14.98	4149.0	293.5	9.4	
9	4	1981	1407	SAT	23 57.13	73 22.40	4156.1	287.9	10.4	
9	4	1981	1532	SAT	24 2.11	73 35.82	4169.3	292.1	9.3	
9	4	1981	1553	SAT	24 3.17	73 39.00	4172.4	290.1	8.8	
9	4	1981	1717	SAT	24 9.73	73 52.32	4186.2	298.3	9.9	
9	4	1981	1905	SAT	24 18.58	74 7.97	4203.0	301.8	9.3	
9	4	1981	2014	SAT	24 24.72	74 17.93	4214.0	304.1	9.5	
9	4	1981	2051	SAT	24 28.10	74 22.84	4219.6	307.1	9.1	
9	4	1981	2201	SAT	24 34.28	74 34.89	4232.2	299.4	10.8	
9	4	1981	2321	SAT	24 40.60	74 42.78	4241.7	311.4	7.2	
9	4	1981	2347	SAT	24 43.01	74 45.43	4245.1	315.0	7.9	
10	4	1981	0106	SAT	24 50.07	74 56.09	4257.1	306.1	9.1	
10	4	1981	0157	SAT	24 54.32	75 3.10	4264.8	303.8	9.0	
10	4	1981	0252	SAT	25 0.14	75 11.00	4274.0	309.1	10.1	
10	4	1981	0320	SAT	25 1.08	75 13.41	4276.4	293.3	5.1	
10	4	1981	0344	SAT	25 3.02	75 18.06	4281.0	294.7	11.6	
10	4	1981	0507	SAT	25 4.88	75 29.06	4291.2	280.6	7.3	
10	4	1981	0655	SAT	25 12.89	75 44.67	4307.4	299.5	9.0	
10	4	1981	0812	C/C	25 19.27	75 57.09	4320.3	299.6	10.1	
10	4	1981	0842	SAT	25 19.51	76 0.60	4323.5	274.3	6.4	
10	4	1981	0951	SAT	25 24.31	76 10.34	4333.5	298.6	8.7	
10	4	1981	1138	SAT	25 32.40	76 26.43	4350.2	299.1	9.3	
10	4	1981	1217	SAT	25 35.42	76 32.26	4356.2	299.9	9.3	
10	4	1981	1317	SAT	25 39.08	76 41.38	4365.2	294.0	9.0	
10	4	1981	1403	SAT	25 41.57	76 48.07	4371.7	292.4	8.5	
10	4	1981	1439	SAT	25 43.43	76 54.20	4377.6	288.6	9.7	
10	4	1981	1504	SAT	25 44.87	76 57.55	4380.9	295.5	8.0	

<sup>a</sup> SAT = satellite navigation; C/C = course change.



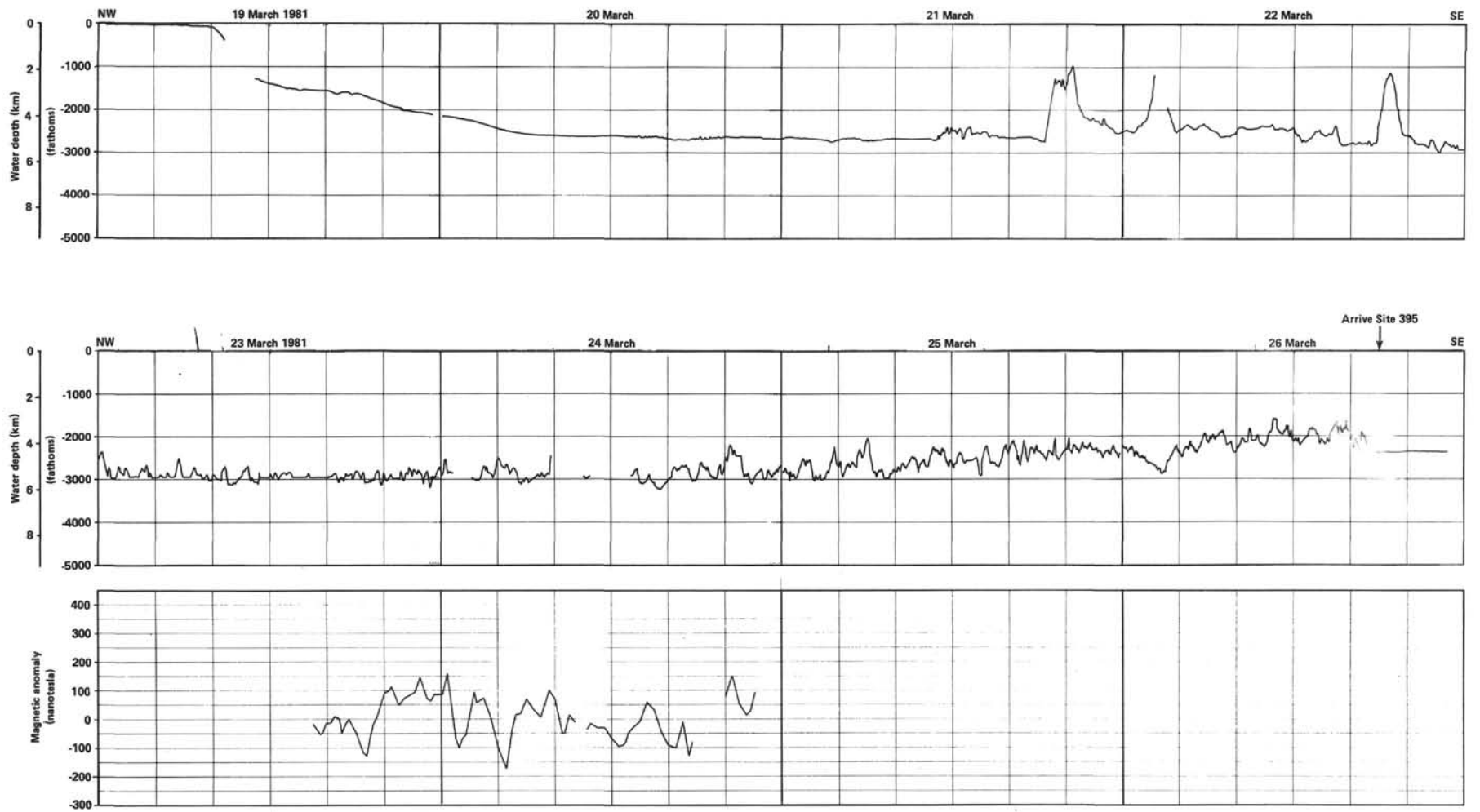
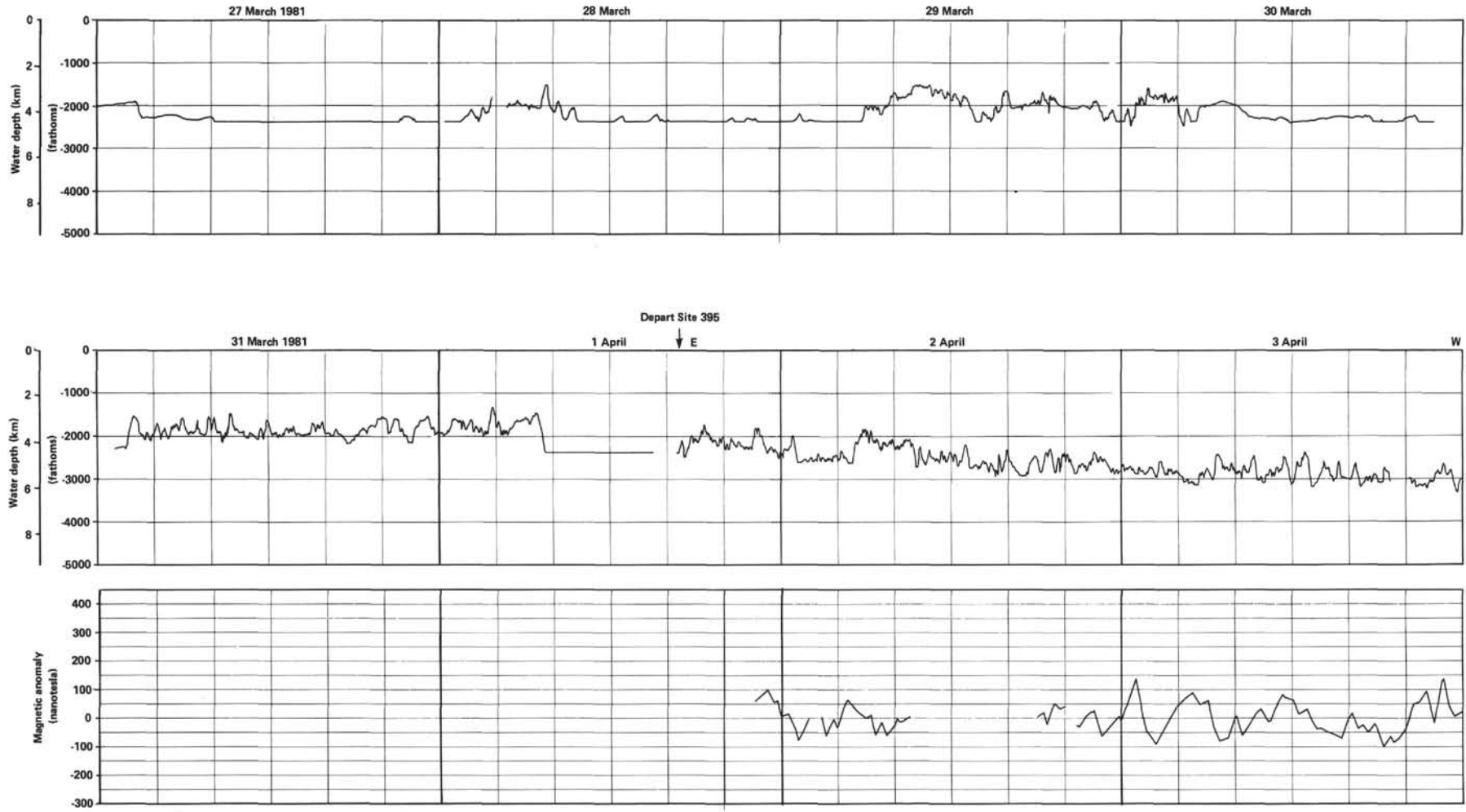


Figure 3. Bathymetry and magnetics (where available) for *USNS Lynch* Cruise 0705-81. C/C = course change.



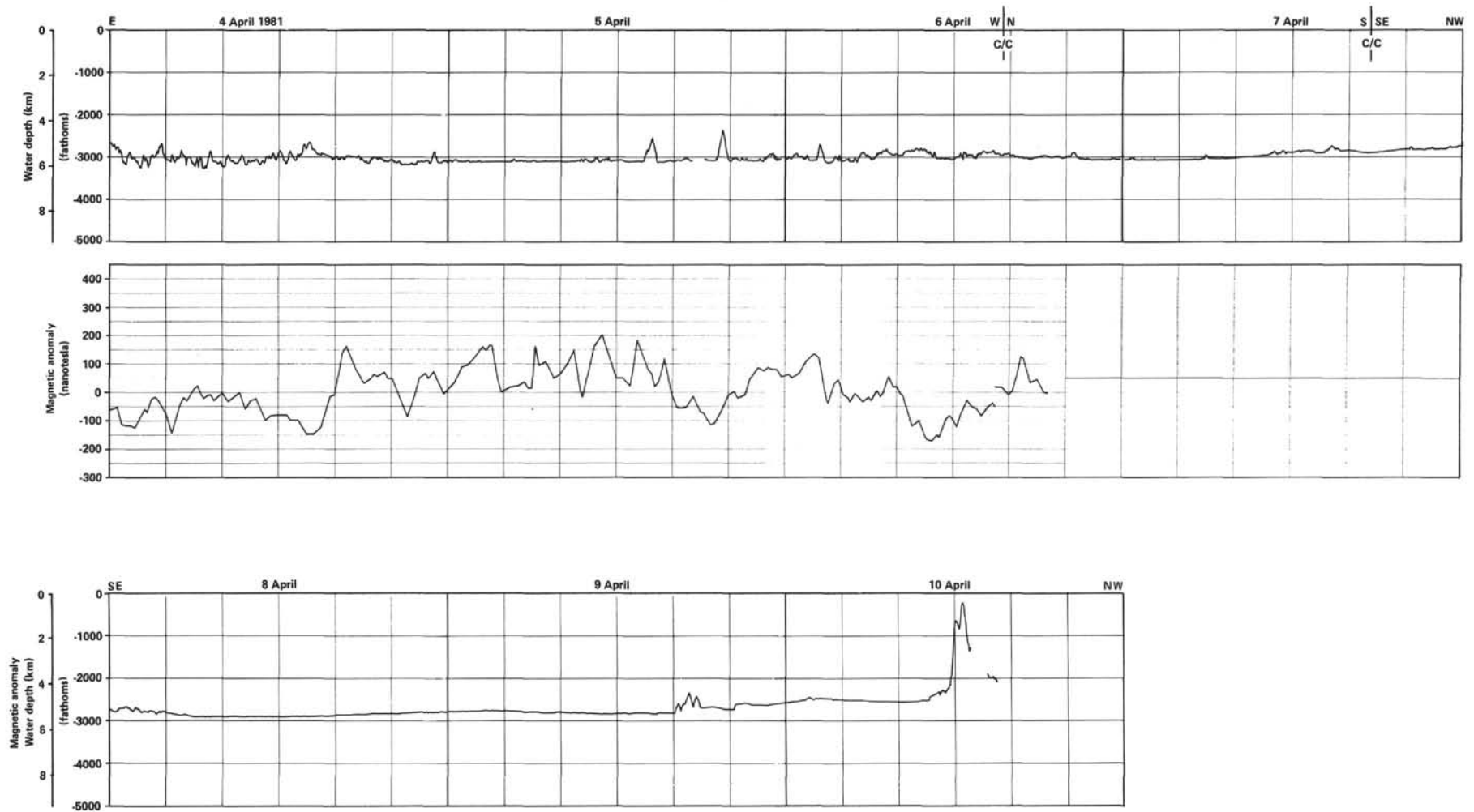


Figure 3. (Continued).