

3. UNDERWAY GEOPHYSICS, *GLOMAR CHALLENGER*, LEG 78B¹

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While steaming from San Juan, Puerto Rico to Site 395, and from Site 395 to Las Palmas in the Canary Islands on Leg 78B, the *Glomar Challenger* towed a Geometrics V4970 proton-precession magnetometer and two Bolt airguns with 40- and 120-cubic-inch capacities. In addition, the bathymetry was monitored continuously with a 12.5-kHz pinger. The ship's position was determined through a combination of dead reckoning and satellite navigation; the satellite fixes were obtained with a Magnavox MX702 satellite navigation system.

The ship's track listed in Table 1 and shown in Figure 1 is accurate to within one nautical mile (Talwani et al., 1966), and lies within a few tens of kilometers of the paths taken on Legs 45 and 46 (Rabinowitz et al., 1979). Within a few kilometers of the site, checks conducted during re-entry demonstrated that the navigational accuracy was improved to ± 100 m by paying increased attention to basement topography while approaching the site. The total-field magnetic anomaly shown in Figure 1

is plotted normal to the ship's track, with the track representing a magnetic anomaly of zero with respect to the 1980 International Geomagnetic Reference Field. A detailed plot of bathymetry and magnetic anomaly strength is plotted as a function of distance along the ship's track in Figure 2. Dates and times are also shown in Figure 2 for comparison with Figure 1. The airgun records and the individual readings of bathymetry and magnetic field strength on which these figures are based are not shown here, but may be obtained upon request from the National Geologic Data Center, Boulder, Colorado.

ACKNOWLEDGMENTS

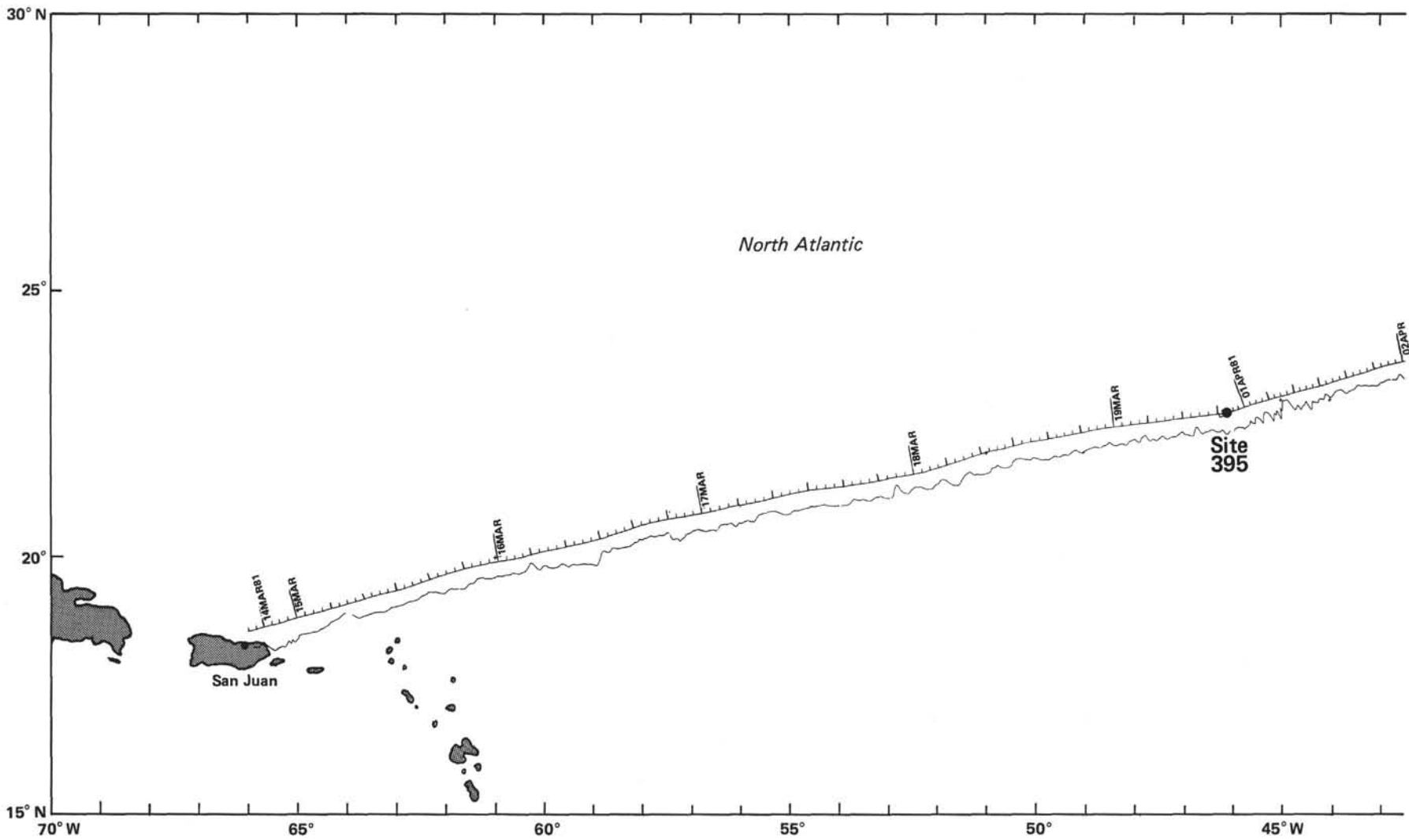
We wish to express our appreciation to Gus Gustafson, the laboratory officer on the *Glomar Challenger*, and to the seagoing technical staff on Leg 78B, for their assistance in obtaining the underway data. We also thank Stuart Smith of the Underway Geophysical Data Center at Scripps Institution of Oceanography for data processing.

REFERENCES

- Rabinowitz, P. D., Heirtzler, J. R., Aikens, T. D., and Purdy, G. M., 1979. Underway geophysical measurements: *Glomar Challenger* Legs 45 and 46. In Melson, W. G., Rabinowitz, P. D., et al., *Init. Repts. DSDP*, 45: Washington (U.S. Govt. Printing Office), 55-118.
- Talwani, M., Dorman, L., Worzel, J. L., and Bryan, G. M., 1966. Navigation at sea by satellite. *J. Geophys. Res.*, 71:5891-5902.

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

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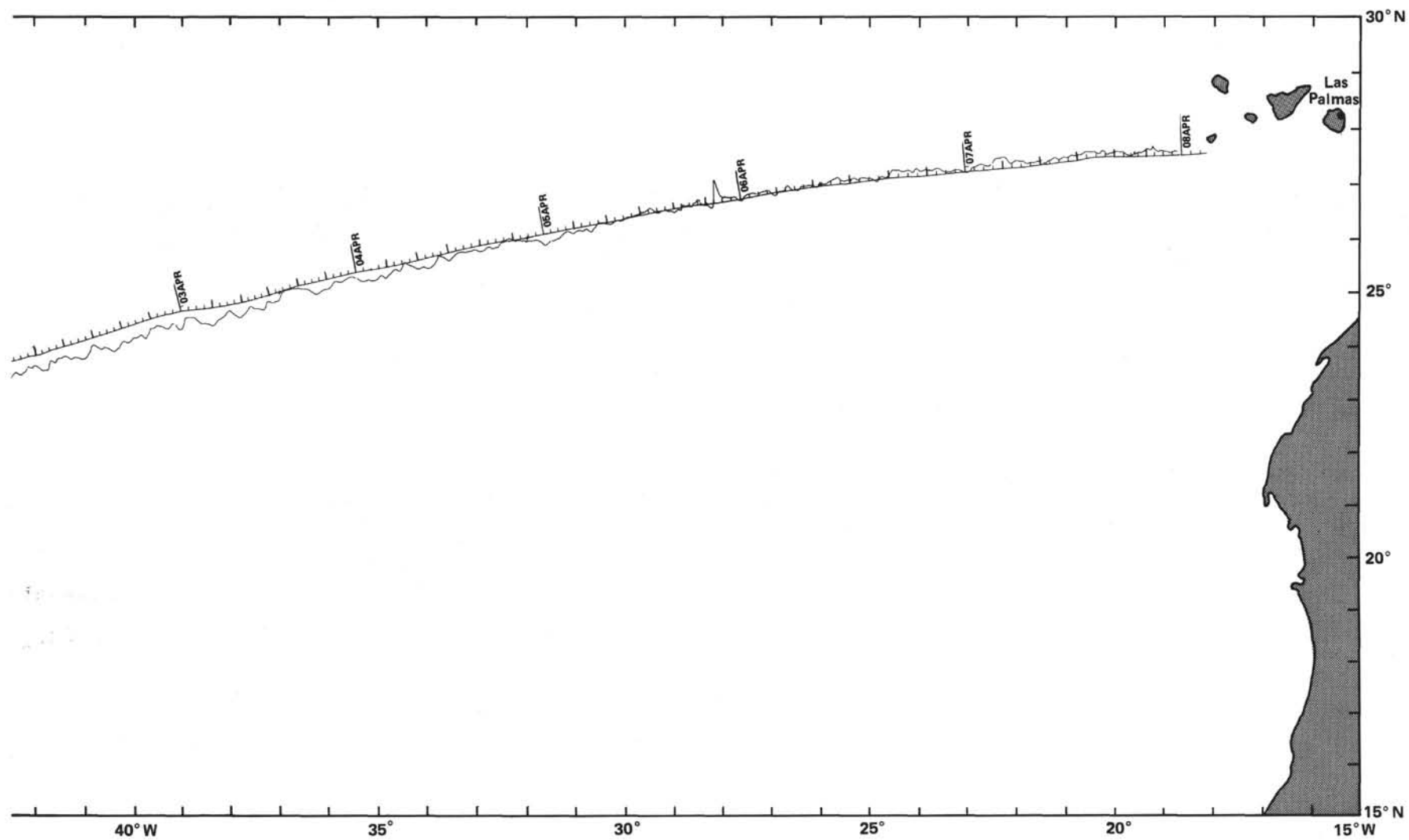


Figure 1. *Glomar Challenger*'s track on Leg 78B. Also shown is the total-field magnetic anomaly as a function of position along the track (track = zero anomaly). Ticks along track represent hour marks.

Table 1. Leg 78B navigation data.

Date	Month ^a	Time (GMT)	Latitude	Longitude	Distance (n. mi.)	Speed (knots)	Course (degrees)	Comments
14	3	1746	18°33.7'N	66°1.3'W	0.0	6.6	73	Dead reckoning
14	3	1748	18°33.8'N	66°1.1'W	0.2	8.7	73	Change speed
14	3	1800	18°34.3'N	65°59.3'W	2.0	9.3	73	Change speed
14	3	2100	18°42.3'N	65°31.0'W	30.0	9.3	89	Change course
14	3	2115	18°42.4'N	65°28.6'W	32.3	9.3	73	
14	3	2202	18°44.5'N	65°21.2'W	39.6	10.2	73	Satellite navigation
14	3	2348	18°49.8'N	65°3.0'W	57.6	10.4	75	Satellite navigation
15	3	000	18°50.3'N	65°0.9'W	59.7	10.4	75	
15	3	434	19°2.8'N	64°12.5'W	107.1	9.5	74	Satellite navigation
15	3	500	19°4.0'N	64°8.3'W	111.2	9.6	73	Change course
15	3	622	19°7.8'N	63°55.1'W	124.3	9.9	74	Satellite navigation
15	3	950	19°17.5'N	63°20.3'W	158.6	9.4	77	Satellite navigation
15	3	1136	19°21.3'N	63°3.2'W	175.1	9.9	76	Satellite navigation
15	3	1157	19°22.1'N	62°59.6'W	178.6	9.9	74	Change course
15	3	1336	19°26.5'N	62°42.9'W	195.0	10.4	71	Satellite navigation
15	3	1354	19°27.5'N	62°39.8'W	198.1	10.4	69	Change course
15	3	1450	19°31.0'N	62°30.2'W	207.8	9.8	70	Satellite navigation
15	3	1522	19°32.8'N	62°25.0'W	213.0	10.4	70	Satellite navigation
15	3	1541	19°33.9'N	62°21.7'W	216.3	10.4	72	Change course
15	3	1556	19°34.7'N	62°19.1'W	218.9	10.0	69	Satellite navigation
15	3	1615	19°35.8'N	62°15.9'W	222.0	10.3	70	Change speed
15	3	1638	19°37.2'N	62°12.0'W	226.0	10.1	72	Satellite navigation
15	3	1715	19°39.2'N	62°5.7'W	232.3	10.1	76	Change course
15	3	1742	19°40.3'N	62°1.0'W	236.8	10.0	73	Satellite navigation
15	3	2008	19°47.3'N	61°36.3'W	261.1	10.0	76	Satellite navigation
15	3	2154	19°51.5'N	61°18.0'W	278.8	10.1	77	Satellite navigation
15	3	2154	19°51.5'N	61°18.0'W	278.8	10.1	80	Change course
16	3	000	19°55.1'N	60°55.9'W	300.0	10.1	80	
16	3	116	19°57.3'N	60°42.5'W	312.7	9.5	81	Satellite navigation
16	3	148	19°58.1'N	60°37.2'W	317.8	9.5	77	Change course
16	3	238	19°59.9'N	60°29.0'W	325.7	10.2	78	Satellite navigation
16	3	300	20°0.7'N	60°25.1'W	329.4	9.6	74	Satellite navigation
16	3	344	20°2.6'N	60°17.9'W	336.4	10.2	76	Satellite navigation
16	3	428	20°4.4'N	60°10.2'W	343.9	10.1	76	Satellite navigation
16	3	530	20°7.0'N	59°59.4'W	354.4	10.3	78	Satellite navigation
16	3	942	20°15.8'N	59°14.3'W	397.6	9.9	78	Satellite navigation
16	3	1000	20°16.4'N	59°11.2'W	400.6	9.9	75	Change course
16	3	1230	20°23.0'N	58°45.7'W	425.4	9.9	71	Satellite navigation
16	3	1402	20°27.9'N	58°30.4'W	440.5	9.9	73	Satellite navigation
16	3	1506	20°31.0'N	58°19.6'W	451.1	10.3	70	Satellite navigation
16	3	1548	20°33.5'N	58°12.4'W	458.3	10.1	70	Satellite navigation
16	3	1648	20°36.9'N	58°2.2'W	468.4	10.1	71	Satellite navigation
16	3	1652	20°37.1'N	58°1.5'W	469.1	10.0	77	Change course
16	3	1916	20°42.4'N	57°36.4'W	493.2	10.3	78	Satellite navigation
16	3	1950	20°43.7'N	57°30.3'W	499.0	10.3	79	Change course
16	3	2102	20°45.9'N	57°17.4'W	511.3	9.8	82	Satellite navigation
16	3	2212	20°47.5'N	57°5.3'W	522.7	10.0	80	Satellite navigation
16	3	2356	20°50.4'N	56°47.1'W	540.0	10.5	79	Satellite navigation
17	3	000	20°50.5'N	56°46.4'W	540.7	10.5	79	
17	3	040	20°51.9'N	56°39.0'W	547.7	10.5	77	Change course
17	3	338	20°59.0'N	56°6.5'W	578.9	10.2	81	Satellite navigation
17	3	405	20°59.7'N	56°1.6'W	583.5	7.2	82	Change speed
17	3	412	20°59.8'N	56°0.7'W	584.3	10.2	81	Change speed
17	3	436	21°0.4'N	55°56.4'W	588.4	10.2	78	Satellite navigation
17	3	704	21°5.7'N	55°30.0'W	613.6	10.2	76	Satellite navigation
17	3	850	21°10.0'N	55°11.2'W	631.7	10.1	76	Satellite navigation
17	3	958	21°12.8'N	54°59.3'W	643.1	10.3	77	Satellite navigation
17	3	1030	21°14.1'N	54°53.6'W	648.6	10.3	79	Change speed
17	3	1146	21°16.6'N	54°39.9'W	661.6	10.1	81	Satellite navigation
17	3	1155	21°16.8'N	54°38.3'W	663.1	10.1	83	Change course
17	3	1600	21°21.6'N	53°54.2'W	704.4	10.1	81	Change course
17	3	1854	21°26.0'N	53°23.0'W	733.8	10.1	79	Change course
17	3	2012	21°28.6'N	53°9.2'W	746.9	10.6	77	Satellite navigation
17	3	2120	21°31.2'N	52°56.6'W	759.0	10.2	81	Satellite navigation
17	3	2306	21°34.1'N	52°37.4'W	777.0	10.0	81	Satellite navigation
17	3	2326	21°34.6'N	52°33.9'W	780.4	9.9	79	Change course
18	3	000	21°35.7'N	52°27.9'W	786.0	9.9	79	
18	3	042	21°37.1'N	52°20.6'W	793.0	9.9	81	Satellite navigation
18	3	102	21°37.6'N	52°17.1'W	796.3	9.7	77	Satellite navigation
18	3	110	21°37.9'N	52°15.7'W	797.5	9.6	73	Change course
18	3	230	21°41.6'N	52°2.5'W	810.4	9.6	74	Satellite navigation
18	3	250	21°42.5'N	51°59.2'W	813.6	10.1	72	Satellite navigation
18	3	616	21°53.3'N	51°23.7'W	848.3	10.3	72	Satellite navigation
18	3	800	21°58.8'N	51°5.3'W	866.2	9.7	71	Satellite navigation
18	3	828	22°0.3'N	51°0.7'W	870.8	9.7	75	Change course
18	3	910	22°2.1'N	50°53.6'W	877.6	9.1	79	Satellite navigation
18	3	1054	22°5.0'N	50°36.8'W	893.4	9.9	75	Satellite navigation
18	8	1158	22°7.7'N	50°25.8'W	903.9	10.1	76	Satellite navigation
18	3	1342	22°12.0'N	50°7.5'W	921.4	9.9	77	Satellite navigation
18	3	1402	22°12.7'N	50°4.0'W	924.7	10.0	82	Change course
18	3	1504	22°14.2'N	49°53.0'W	935.0	9.8	80	Satellite navigation
18	3	1618	22°16.2'N	49°40.2'W	947.1	9.6	80	Change speed
18	3	1652	22°17.1'N	49°34.4'W	952.5	9.4	79	Satellite navigation
18	3	2220	22°27.1'N	48°39.9'W	1003.9	9.2	79	Satellite navigation
18	3	2245	22°27.8'N	48°35.8'W	1007.7	9.4	82	Change course, speed
19	3	000	22°29.4'N	48°23.2'W	1019.5	9.4	82	
19	3	120	22°31.1'N	48°9.8'W	1032.0	10.0	84	Satellite navigation
19	3	250	22°32.8'N	47°53.6'W	1047.0	9.5	84	Satellite navigation
19	3	318	22°33.3'N	47°48.8'W	1051.5	9.5	83	Change course
19	3	440	22°34.9'N	47°34.8'W	1064.5	9.7	82	Satellite navigation
19	3	1006	22°41.9'N	46°38.1'W	1117.3	10.1	84	Satellite navigation
19	3	1220	22°44.2'N	46°13.8'W	1139.8	7.1	85	Change speed

Table 1. (Continued).

Date	Month ^a	Time (GMT)	Latitude	Longitude	Distance (n. mi.)	Speed (knots)	Course (degrees)	Comments
19	3	1230	22°44.3'N	46°12.6'W	1141.0	6.3	86	Change speed
19	3	1234	22°44.3'N	46°12.1'W	1141.4	6.3	83	Satellite navigation
19	3	1252	22°44.5'N	46°10.1'W	1143.3	6.3	81	Change course
19	3	1320	22°45.0'N	46°6.9'W	1146.3	6.2	81	Satellite navigation
19	3	1338	22°45.3'N	46°4.9'W	1148.1	6.0	80	Cross over Site 395
On station								
31	3	1857	22°40.3'N	46°15.0'W	1158.7	6.5	74	Underway
31	3	1915	22°40.9'N	46°13.0'W	1160.6	5.7	74	Change speed
31	3	1920	22°41.0'N	46°12.5'W	1161.1	5.6	74	Satellite navigation
31	3	1937	22°41.4'N	46°10.9'W	1162.7	5.6	60	Change course
31	3	2028	22°43.8'N	46°6.4'W	1167.4	5.9	53	Satellite navigation
31	3	2042	22°44.6'N	46°5.2'W	1168.8	6.3	23	Change speed
31	3	2049	22°45.3'N	46°4.9'W	1169.5	6.1	29	Depart Site 395
31	3	2049	22°45.3'N	46°4.9'W	1169.5	6.1	29	Underway
31	3	2050	22°45.4'N	46°4.8'W	1169.6	6.0	72	Change course
31	3	2216	22°48.1'N	45°56.0'W	1178.2	6.3	72	Satellite navigation
31	3	2256	22°49.4'N	45°51.7'W	1182.4	6.1	69	Satellite navigation
31	3	2300	22°49.5'N	45°51.3'W	1182.8	6.6	69	Change speed
1	4	000	22°51.9'N	45°44.6'W	1189.4	6.6	69	
1	4	018	22°52.6'N	45°42.6'W	1191.4	7.4	73	Satellite navigation
1	4	040	22°53.4'N	45°39.8'W	1194.1	7.0	72	Satellite navigation
1	4	104	22°54.3'N	45°36.9'W	1196.9	7.0	75	Change course
1	4	206	22°56.2'N	45°29.3'W	1204.2	7.3	75	Satellite navigation
1	4	301	22°58.0'N	45°22.3'W	1210.8	7.3	73	Change course
1	4	522	23°3.0'N	45°4.6'W	1227.9	6.7	77	Satellite navigation
1	4	539	23°3.4'N	45°2.6'W	1229.8	7.8	76	Change speed
1	4	710	23°6.2'N	44°50.1'W	1241.6	7.5	75	Satellite navigation
1	4	816	23°8.4'N	44°41.4'W	1249.9	7.6	75	Satellite navigation
1	4	1004	23°12.0'N	44°27.1'W	1263.5	7.6	77	Satellite navigation
1	4	1140	23°14.8'N	44°14.2'W	1275.7	7.7	74	Satellite navigation
1	4	1202	23°15.6'N	44°11.2'W	1278.6	7.7	72	Change course
1	4	1326	23°18.9'N	44°0.0'W	1289.4	7.9	72	Satellite navigation
1	4	1500	23°22.7'N	43°47.2'W	1301.8	7.9	74	Change course
1	4	1520	23°23.4'N	43°44.4'W	1304.4	7.5	73	Satellite navigation
1	4	1619	23°25.6'N	43°36.7'W	1311.8	8.4	73	Change speed
1	4	1644	23°26.6'N	43°33.0'W	1315.3	8.2	73	Satellite navigation
1	4	1830	23°30.8'N	43°17.9'W	1329.8	8.1	72	Satellite navigation
1	4	1938	23°33.7'N	43°8.4'W	1339.0	8.2	72	
1	4	2124	23°38.2'N	42°53.3'W	1353.5	8.0	76	Satellite navigation
1	4	2332	23°42.2'N	42°35.2'W	1370.6	7.6	78	Satellite navigation
2	4	000	23°43.0'N	42°31.4'W	1374.1	7.6	78	
2	4	116	23°45.0'N	42°21.2'W	1383.7	8.2	75	Satellite navigation
2	4	145	23°46.0'N	42°17.0'W	1387.7	8.2	73	Change course
2	4	308	23°49.4'N	42°5.2'W	1399.0	8.1	79	Satellite navigation
2	4	335	23°50.1'N	42°1.3'W	1402.7	8.1	80	Change course
2	4	436	23°51.6'N	41°52.4'W	1410.9	8.5	68	Satellite navigation
2	4	620	23°57.0'N	41°37.5'W	1425.6	8.0	75	Satellite navigation
2	4	728	23°59.4'N	41°27.9'W	1434.7	8.4	74	Satellite navigation
2	4	914	24°3.4'N	41°12.2'W	1449.6	8.6	73	Satellite navigation
2	4	1046	24°7.2'N	40°58.3'W	1462.8	8.2	72	Satellite navigation
2	4	1232	24°11.7'N	40°43.2'W	1477.3	8.4	72	Satellite navigation
2	4	1500	24°18.2'N	40°21.6'W	1498.0	8.4	73	Change course
2	4	1740	24°24.9'N	39°58.2'W	1520.4	8.4	69	Satellite navigation
2	4	1815	24°26.7'N	39°53.2'W	1525.3	8.4	73	Change course
2	4	2028	24°32.1'N	39°33.7'W	1543.8	8.3	75	Change course
2	4	2036	24°32.4'N	39°32.5'W	1544.9	8.7	74	Satellite navigation
2	4	2057	24°33.2'N	39°29.3'W	1548.0	8.6	76	Change course
3	4	000	24°39.5'N	39°1.1'W	1574.3	8.6	76	
3	4	014	24°40.0'N	38°59.0'W	1576.3	8.8	85	Satellite navigation
3	4	315	24°42.3'N	38°29.9'W	1602.9	8.8	82	Change course
3	4	530	24°45.0'N	38°8.3'W	1622.7	8.1	81	Satellite navigation
3	4	551	24°45.4'N	38°5.2'W	1625.5	8.1	77	Change course
3	4	600	24°45.7'N	38°3.9'W	1626.7	8.1	78	Change course
3	4	824	24°49.8'N	37°43.0'W	1646.2	7.8	78	Satellite navigation
3	4	845	24°50.4'N	37°40.0'W	1648.9	7.8	75	Change course
3	4	1148	24°56.5'N	37°14.7'W	1672.7	8.4	73	Satellite navigation
3	4	1600	25°7.0'N	36°37.7'W	1707.8	8.4	77	Change course
3	4	1650	25°8.6'N	36°30.2'W	1714.8	8.0	77	Satellite navigation
3	4	1838	25°11.8'N	36°14.7'W	1729.2	7.9	77	Satellite navigation
3	4	1946	25°13.8'N	36°5.0'W	1738.2	8.4	77	Satellite navigation
3	4	2338	25°21.2'N	35°30.2'W	1770.5	8.1	79	Satellite navigation
4	4	000	25°21.8'N	35°27.0'W	1773.5	8.1	79	
4	4	005	25°21.9'N	35°26.2'W	1774.2	8.1	80	Change course
4	4	021	25°22.3'N	35°23.9'W	1776.3	8.6	80	Change speed
4	4	442	25°28.8'N	34°43.0'W	1813.8	8.9	80	Satellite navigation
4	4	505	25°29.4'N	34°39.3'W	1817.2	8.9	78	Change course
4	4	628	25°32.0'N	34°26.0'W	1829.5	9.0	78	Satellite navigation
4	4	652	25°32.7'N	34°22.1'W	1833.1	9.0	76	Change course
4	4	736	25°34.3'N	34°15.0'W	1839.7	8.8	76	Satellite navigation
4	4	924	25°38.2'N	33°58.0'W	1855.5	8.4	76	Satellite navigation
4	4	1014	25°39.9'N	33°50.5'W	1862.5	8.9	77	Satellite navigation
4	4	1100	25°41.5'N	33°43.1'W	1869.3	8.1	75	Satellite navigation
4	4	1200	25°43.6'N	33°34.4'W	1877.4	8.6	76	Satellite navigation
4	4	1246	25°45.2'N	33°27.3'W	1884.0	8.9	76	Satellite navigation
4	4	1410	25°48.2'N	33°13.9'W	1896.5	8.9	78	Change course
4	4	1428	25°48.7'N	33°11.0'W	1899.1	8.9	78	Satellite navigation
4	4	1602	25°51.5'N	32°55.9'W	1913.0	9.1	79	Satellite navigation
4	4	1627	25°52.2'N	32°51.8'W	1916.8	9.1	80	Change course
4	4	1746	25°54.3'N	32°38.6'W	1928.8	8.8	80	Satellite navigation
4	4	1856	25°56.1'N	32°27.4'W	1939.0	8.8	80	Satellite navigation

Table 1. (Continued).

Date	Month ^a	Time (GMT)	Latitude	Longitude	Distance (n. mi.)	Speed (knots)	Course (degrees)	Comments
4	4	2042	25°58.7'N	32°10.4'W	1954.6	8.8	78	Satellite navigation
4	4	2200	26°1.0'N	31°58.0'W	1965.9	8.5	79	Satellite navigation
4	4	2340	26°3.8'N	31°42.5'W	1980.1	8.4	80	Satellite navigation
5	4	000	26°4.3'N	31°39.4'W	1982.9	8.4	80	
5	4	036	26°5.1'N	31°33.9'W	1988.0	8.3	79	Satellite navigation
5	4	218	26°7.7'N	31°18.4'W	2002.1	8.8	79	Satellite navigation
5	4	354	26°10.5'N	31°3.0'W	2016.2	9.1	79	Satellite navigation
5	4	538	26°13.4'N	30°45.8'W	2031.9	9.3	80	Satellite navigation
5	4	648	26°15.3'N	30°33.9'W	2042.8	9.3	81	Satellite navigation
5	4	834	26°17.9'N	30°15.8'W	2059.2	9.5	79	Satellite navigation
5	4	908	26°18.9'N	30°9.9'W	2064.6	9.4	79	Satellite navigation
5	4	908	26°18.9'N	30°9.9'W	2064.6	9.4	77	Change course
5	4	1012	26°21.2'N	29°59.0'W	2074.6	9.2	77	Satellite navigation
5	4	1054	26°22.7'N	29°52.0'W	2081.1	9.5	77	Satellite navigation
5	4	1150	26°24.7'N	29°42.4'W	2089.9	9.4	77	Satellite navigation
5	4	1336	26°28.3'N	29°24.3'W	2106.5	9.0	77	Satellite navigation
5	4	1406	26°29.3'N	29°19.4'W	2111.0	9.0	81	Change course
5	4	1808	26°35.2'N	28°39.2'W	2147.5	9.2	83	Satellite navigation
5	4	1954	26°37.3'N	28°21.1'W	2163.8	9.4	82	Satellite navigation
5	4	2204	26°40.2'N	27°58.5'W	2184.2	9.3	81	Satellite navigation
5	4	2217	26°40.5'N	27°56.3'W	2186.2	9.9	80	Change speed
5	4	2246	26°41.3'N	27°51.0'W	2190.9	10.3	80	Change speed
5	4	2330	26°42.6'N	27°42.7'W	2198.5	10.2	79	Change course
5	4	2344	26°43.0'N	27°40.1'W	2200.9	9.9	80	Satellite navigation
6	4	000	26°34.5'N	27°37.2'W	2203.5	9.9	80	
6	4	128	26°46.1'N	27°21.2'W	2218.0	10.0	79	Satellite navigation
6	4	348	26°50.5'N	26°55.5'W	2241.4	10.0	81	Change course
6	4	600	26°53.9'N	26°31.0'W	2263.5	9.9	83	Satellite navigation
6	4	920	26°58.2'W	25°54.2'W	2296.6	10.0	86	Change course
6	4	944	26°58.5'N	25°49.7'W	2300.6	10.5	85	Satellite navigation
6	4	1130	27°0.1'N	26°29.0'W	2319.1	10.5	83	Satellite navigation
6	4	1608	27°6.4'N	24°34.6'W	2368.0	10.3	85	Satellite navigation
6	4	1635	27°6.8'N	24°29.4'W	2372.6	10.4	87	Change course
6	4	1756	27°7.6'N	24°13.7'W	2386.6	10.4	86	Satellite navigation
6	4	1950	27°8.9'N	23°51.6'W	2406.3	10.4	84	Change course
7	4	000	27°13.2'N	23°3.2'W	2449.5	10.4	84	
7	4	400	27°17.3'N	22°16.8'W	2491.0	10.1	87	Satellite navigation
7	4	548	27°18.3'N	21°56.4'W	2509.2	10.3	85	Satellite navigation
7	4	610	27°18.6'N	21°52.2'W	2513.0	10.2	83	Change course
7	4	836	27°21.5'N	21°24.3'W	2537.9	10.3	82	Satellite navigation
7	4	1018	27°24.0'N	21°4.7'W	2555.5	10.2	84	Satellite navigation
7	4	1150	27°25.6'N	20°47.1'W	2571.2	10.2	78	Satellite navigation
7	4	1306	27°28.3'N	20°32.9'W	2584.1	10.2	83	Change course
7	4	1338	27°29.0'N	20°26.8'W	2589.5	9.9	86	Satellite navigation
7	4	1455	27°29.8'N	20°12.5'W	2602.2	9.9	88	Change course
7	4	1518	27°29.9'N	20°8.2'W	2606.1	9.9	89	Satellite navigation
7	4	1547	27°30.0'N	20°2.8'W	2610.8	9.9	90	Change course
7	4	1700	27°29.9'N	19°49.2'W	2622.9	7.9	91	Change speed
7	4	1704	27°29.9'N	19°48.6'W	2623.4	8.1	89	Satellite navigation
7	4	1814	27°30.0'N	19°37.9'W	2632.9	7.5	89	Satellite navigation
7	4	1930	27°30.1'N	19°27.1'W	2642.5	9.5	89	Change speed
7	4	2002	27°30.2'N	19°21.4'W	2647.6	9.3	89	Satellite navigation
7	4	2202	27°30.5'N	19°0.4'W	2666.2	10.0	87	Satellite navigation
8	4	000	27°31.6'N	18°38.3'W	2685.8	10.0	87	
8	4	130	27°32.4'N	18°21.4'W	2700.8	10.6	85	Satellite navigation
8	4	245	27°33.6'N	18°6.54'W	2714.1	10.6	85	Dead reckoning

^a Of the year 1981.

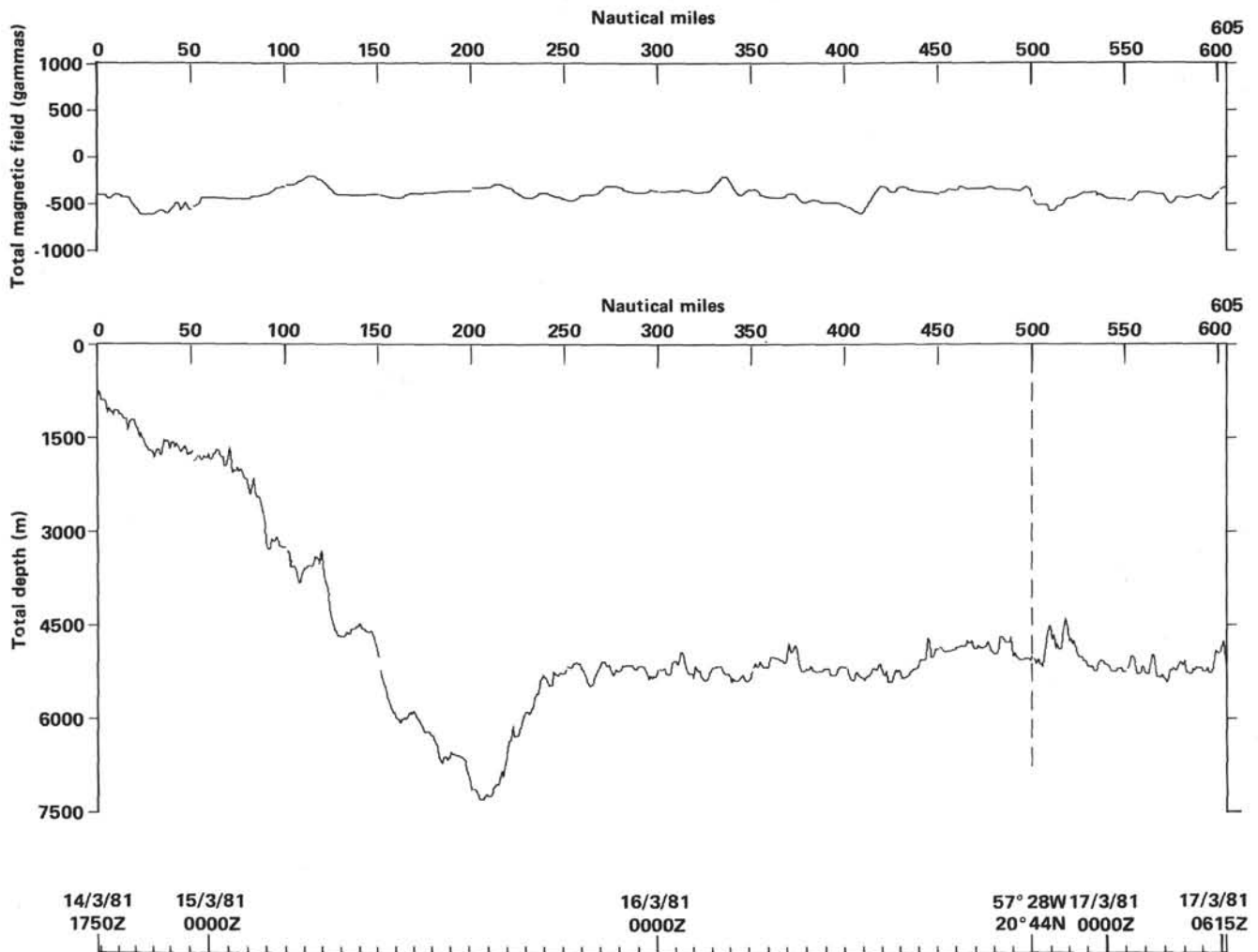


Figure 2. Total-field magnetic anomaly and bathymetry (corrected meters) as a function of distance and steaming time along ship's track shown in Figure 1.

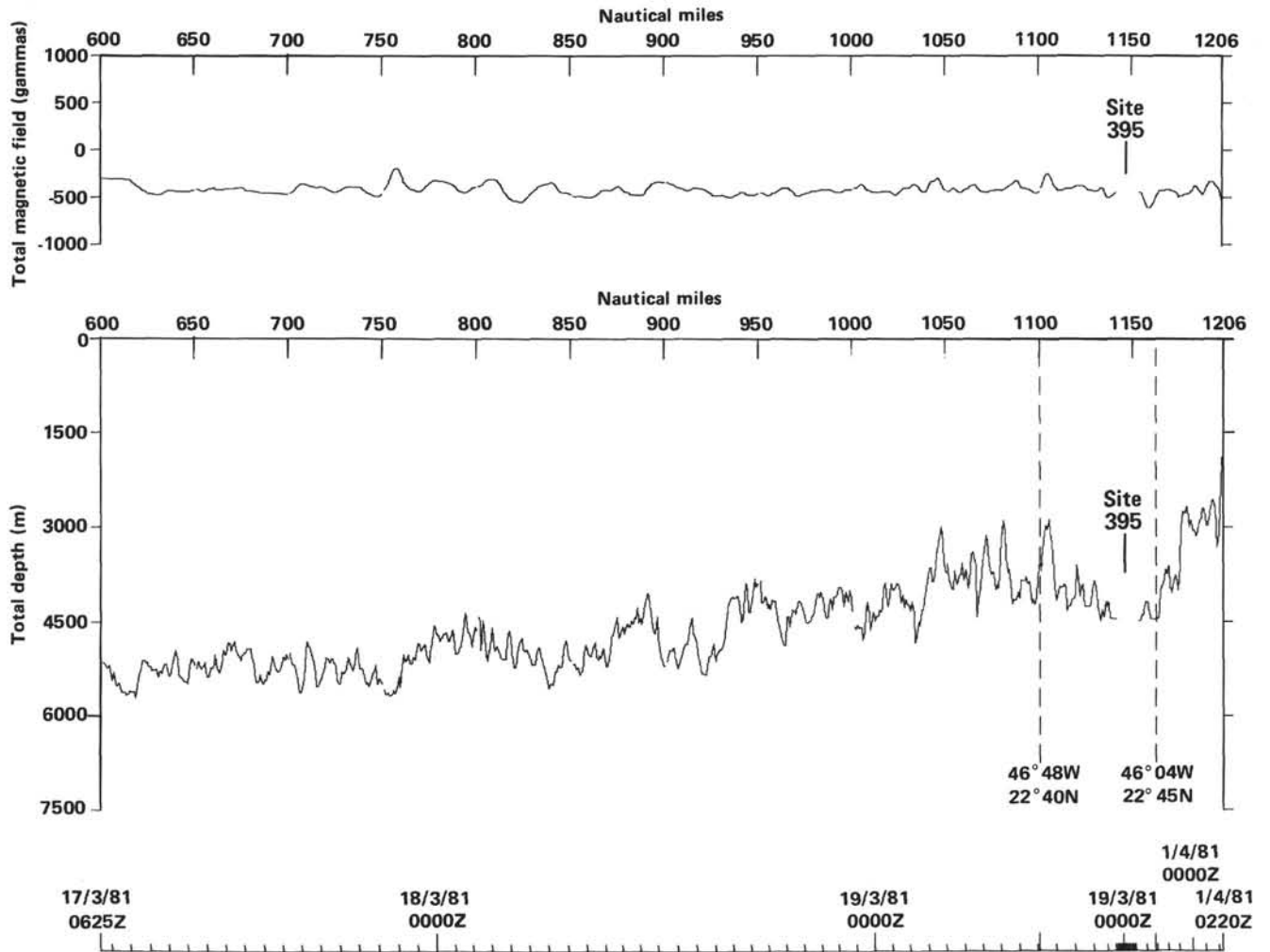


Figure 2. (Continued).

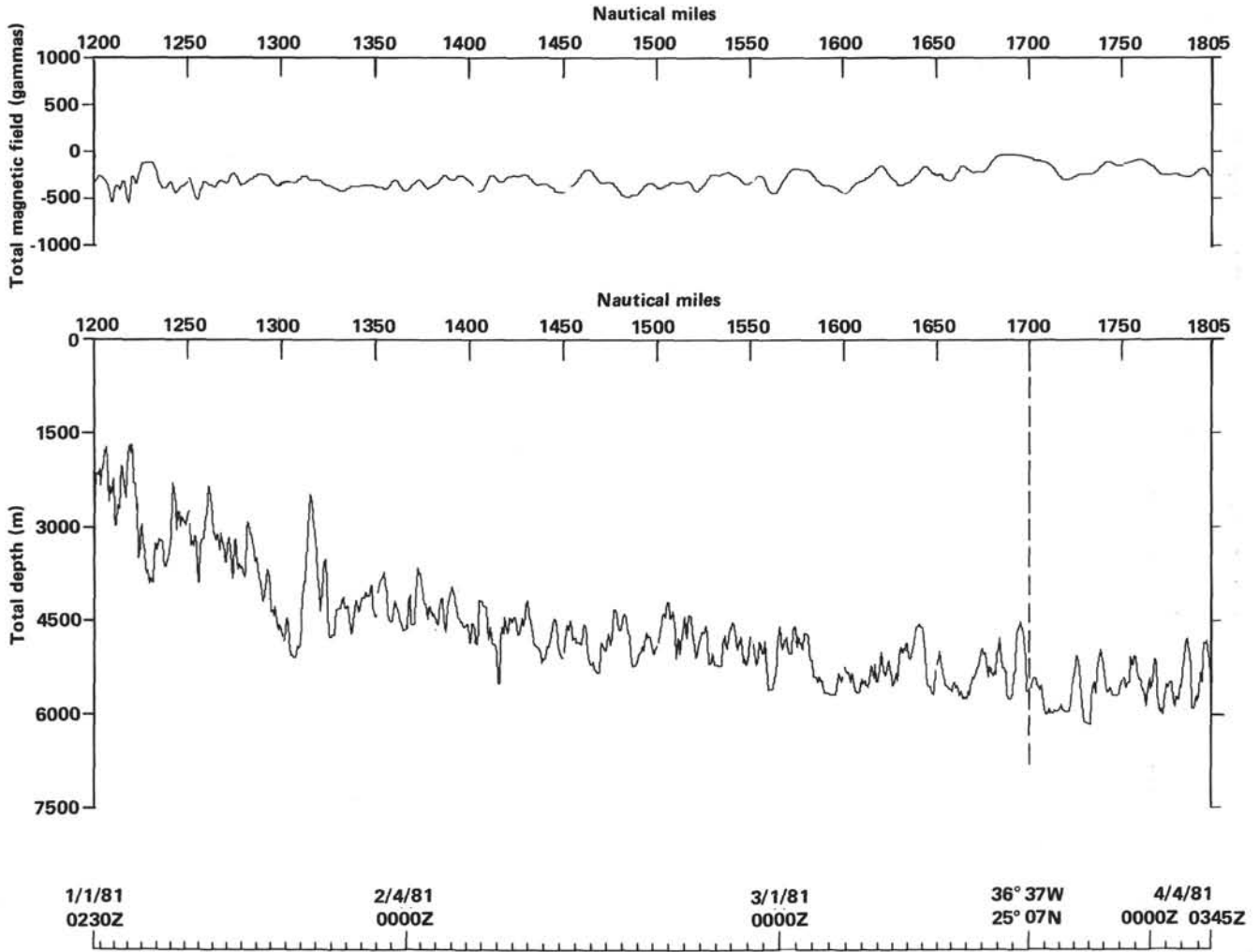


Figure 2. (Continued).

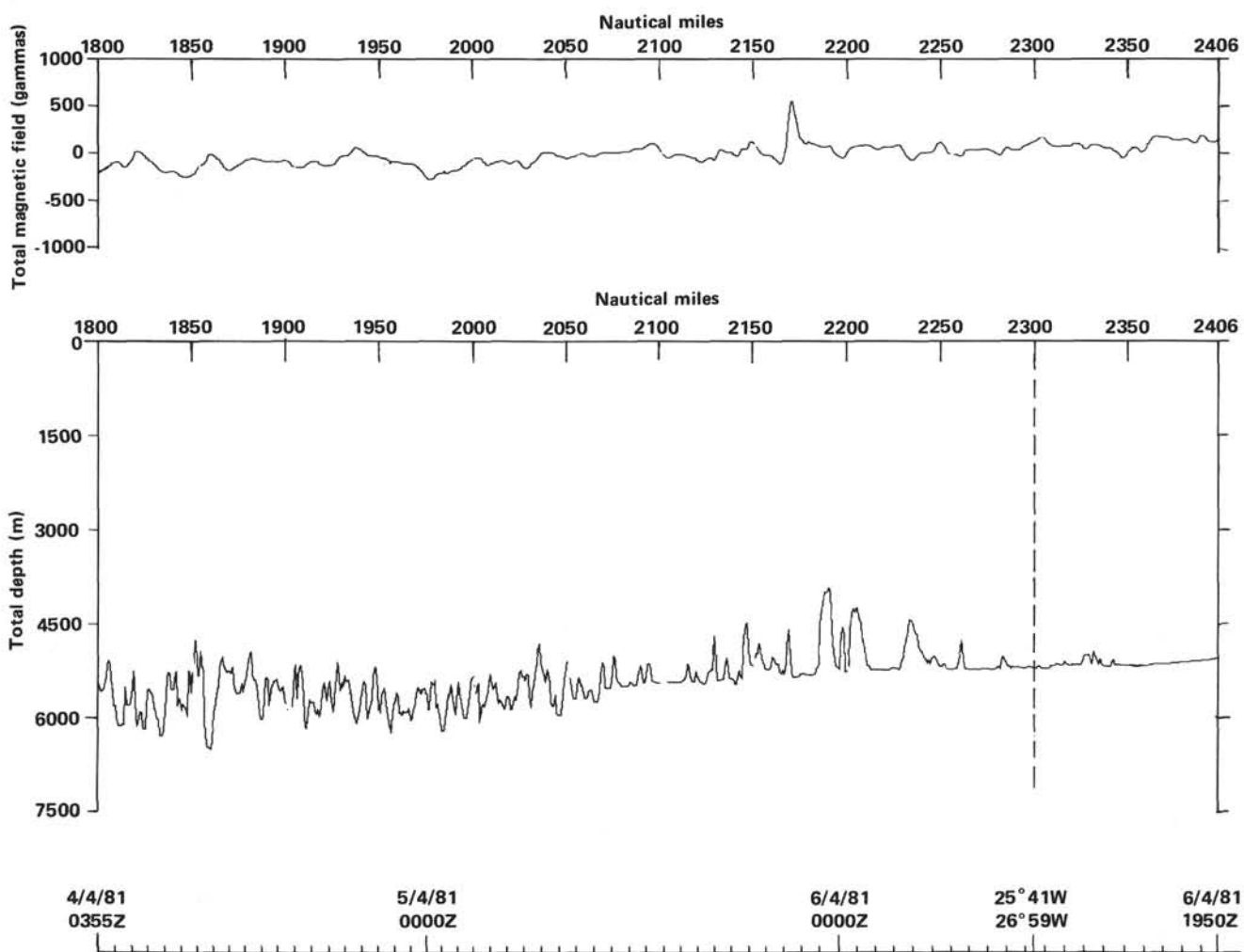


Figure 2. (Continued).

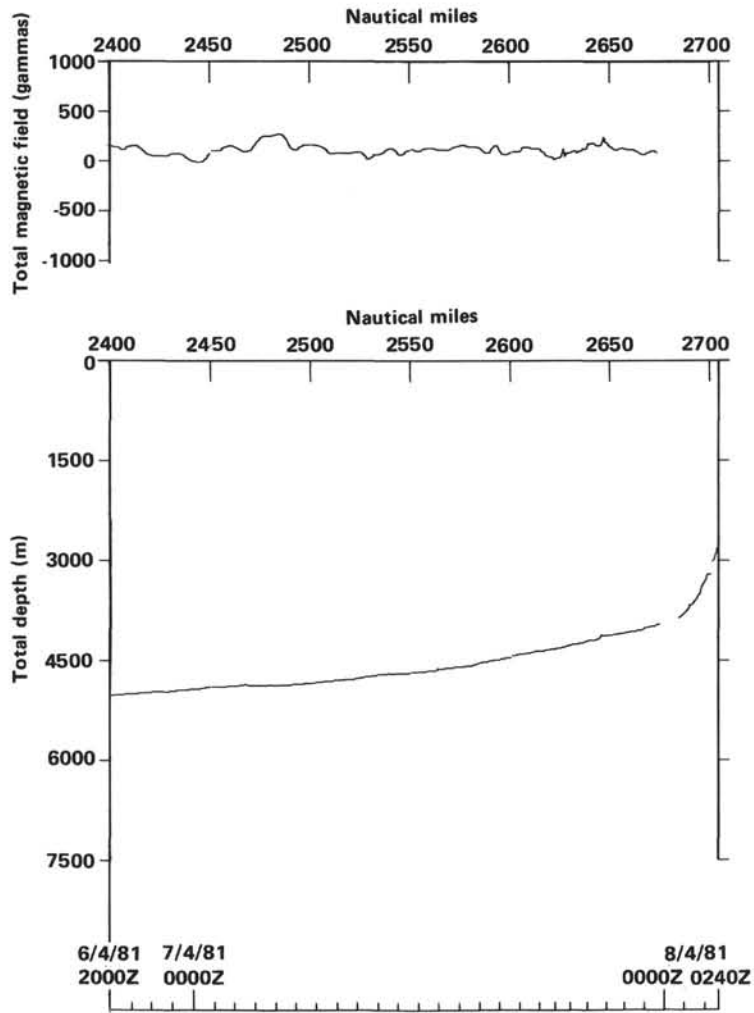


Figure 2. (Continued).