4. UNDERWAY GEOPHYSICS COLLECTED ON DEEP SEA DRILLING PROJECT LEG 68[1]

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INTRODUCTION

Glomar Challenger departed Willemstad, Curacao, on Leg 68 on 13 August 1979, and arrived at the Caribbean side of the Panama Canal on 28 August. It departed from the Pacific side of the Canal on 3 September, completing the leg at Salinas, Ecuador, on 18 September. The trackline of the cruise is shown in Figure 1.

Seismic-reflection profiles (3.5 kHz and air gun) and magnetics data were continuously recorded along the transit. The 3.5 kHz data are not presented here because of the volume of data involved. They can be viewed upon request at the Deep Sea Drilling Project (DSDP) West Coast Repository, Scripps Institution of Oceanography, La Jolla, California. The air-gun system utilized a 5-in.^{3} and a 40-in.^{3} air gun, fired simultaneously, and data were recorded after passing through an 80 to 160 Hz band-pass filter. The master recorder triggered the system at 10-s intervals (not presented here), and a slave was time-delayed and recorded at 5-s intervals (presented here). (Time increases from left to right on all figures.) Table 1 lists navigation data reduced from the primary satellite fixes and the ship's gyro and speed log. The navigation data include day; month; year; time in Greenwich time; latitude and longitude in degrees, minutes, and tenths of minutes (a negative longitude is west); cumulative distance along the track in nautical miles; actual speed (in knots) and course calculated from satellite fixes; drift speed (in knots) and heading calculated from satellite fixes and dead reckoning; dead reckoning speed (in knots) and course from the ship's speed log and gyro; and a comment column with miscellaneous events.

Figures 2 through 5 show bathymetry and magnetic anomaly plotted in profile as functions of time, distance, latitude, and longitude with distance as the linear function. All depths are plotted in uncorrected meters. The seismic-reflection profiles are shown in Figures 7 through 29.

MAGNETICS

Our magnetics data from the Caribbean transect show only small-amplitude anomalies with a notable lack of fluctuations over the continental margin (Fig. 2).

The magnetics data from our Pacific traverse are shown in Figures 3 through 5. The scientists of Leg 9 (Hays et al., 1972) describe Site 83 as being on the east flank of the East Pacific Rise (EPR). Our magnetics data, however, support the alternate interpretation (implied by van Andel et al., 1975, fig. 7) that Sites 83 and 503 (within seven nautical miles of each other) are both located on the north flank of the Galapagos Ridge. If our track had traversed the eastern flank of the EPR, large-amplitude magnetic anomalies should have been recorded as a result of our crossing roughly perpendicular to the magnetic lineations. If, on the other hand, our track were along the north flank of the Galapagos Ridge, then we would have been parallel to the magnetic lineations, and the magnetic anomalies should have been subdued and not well defined. In fact, the magnetic anomalies along our track to Site 503 were subdued and ill defined (Fig. 4). The trackline shows high-amplitude magnetic anomalies from the time we departed Site 503—similar to the pattern predicted if we were over the Galapagos Ridge. Figure 4 shows the magnetic anomalies prior to and after coring operations at Site 503. The distinct difference in character of the magnetic anomalies coincides with the change from approach to departure courses. This evidence strongly suggests that we located Site 503, and hence also Site 83 (Leg 9), on the north flank of Galapagos Ridge.

SEISMIC REFLECTION PROFILES

The bathymetry of the Caribbean region traversed on Leg 68 is shown in Figure 6A. The seismic-reflection system was turned on after about 20 hr. of a shakedown cruise out of Curacao. Figures 7 through 9 show a traverse from the upper continental slope to the Colombia Basin. A large basin is clearly shown to be formed behind a large, uplifted(?) block. The channel at 2330 hr. on 14 August is part of an unnamed canyon system shown on the bathymetric chart (Fig. 6A) to incise the shelf break and traverse northwesterly to eventually feed onto the Colombia Basin. The large uplifted(?) block appears to be part of what is probably a major tectonic shear underlying the continental margin. Figures 9 through 11 show a crossing onto the Colombia Basin (Fig. 9A), then over the Magdalena Fan (Figs. 9B, 10, 11). The flat, smooth, channelized surface of the Colombia Basin is contrasted by the hummocky, non-channelized surface of the Magdalena Fan. The diffuse reflector at about 0.2- to 0.3-s reflection time in Figures 10 through 13 is the middle Pliocene and Miocene volcanogenic turbidites recovered at Site 154 (Edgar et al., 1973). Figures 11 and 12 show our crossing onto what Holcombe (1975) calls Mono Ridge, the feature drilled at Sites 154 and 502. The location of Site 502 is marked on Figure 12. Our traverse from Site 502 to Panama (Fig. 13) shows the post-Miocene turbidites of the Pana-

[1] Prell, W. L., Gardner, J. V., et al., *Init. Repts. DSDP*, 68: Washington (U.S. Govt. Printing Office).

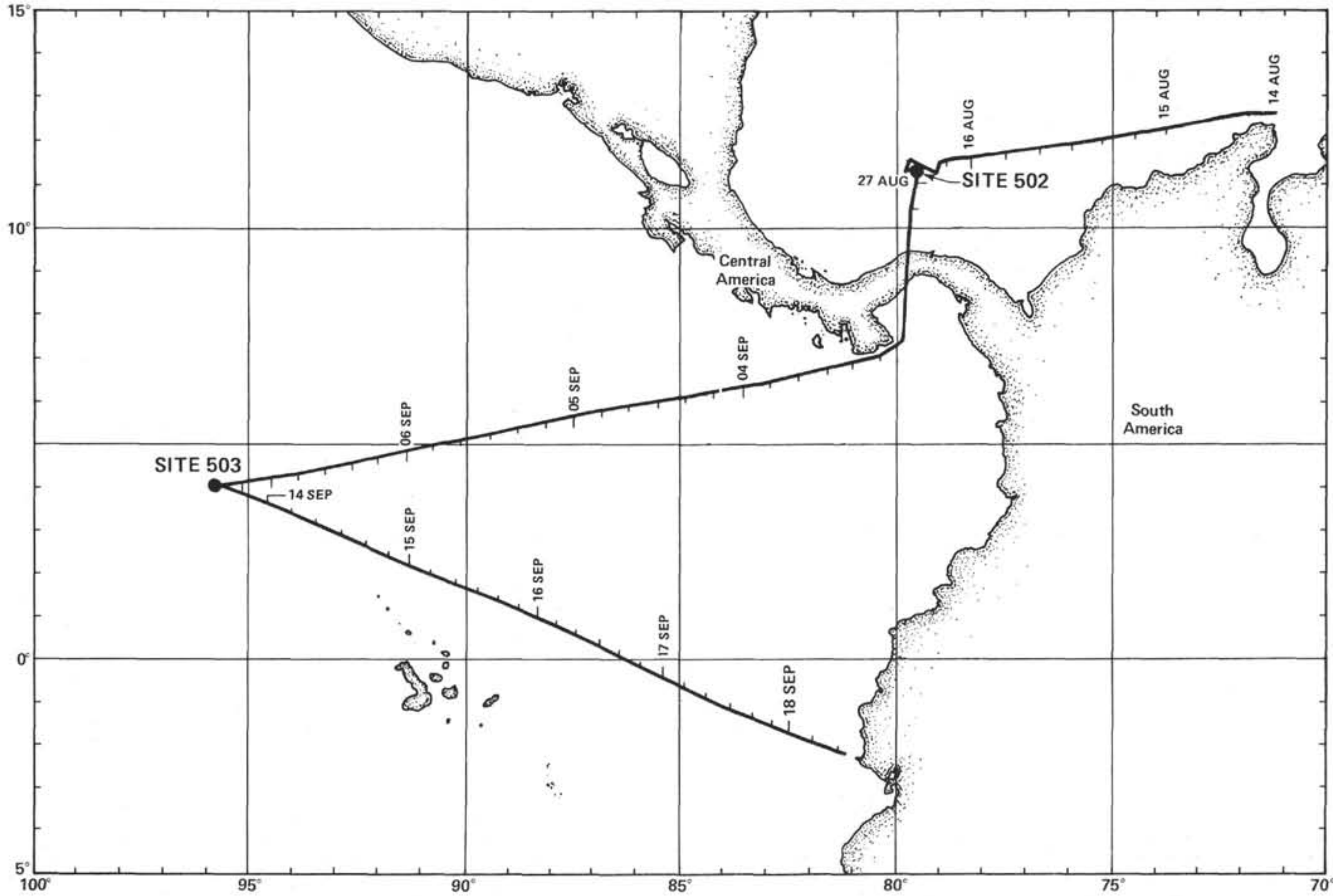

Figure 1. Tracklines for Leg 68 of *Glomar Challenger*. Tick marks along track are hourly marks. (Day/month point to 0000Z hr.)

ma Plain onlapping the uplifted block where Site 502 was drilled.

The bathymetry of the portion of the eastern equatorial Pacific traversed during Leg 68 is shown on Figure 6B. The seismic-reflection system was not deployed until the ship was west of the Azuero Peninsula of Panama because of heavy ship traffic. We traversed a section of very rough topography with evidence of numerous deep canyons and faults (Fig. 14) and then crossed Coiba Ridge (Fig. 15). Coiba Ridge has a very thick, acoustically transparent section on the eastern flank and a steep escarpment on its western flank. We then crossed over a region of steep, faulted terrain with a large seamount and approached Cocos Ridge. The area between Coiba Ridge and the large seamount appears to be a large graben (Fig. 15). The large seamount has dammed sediment that slumped from Cocos Ridge.

Cocos Ridge (Figs. 15–18) appears as a large bathymetric high with a thick sediment blanket having many slumps along the edges and faults throughout. Numerous projections of acoustic basement occur over the Ridge and large, steep seamounts are more numerous along the western margin (Fig. 18) than elsewhere on the Ridge.

We continued our traverse and crossed the southern section of the Guatemala Basin along the boundary with the north flank of the Galapagos Ridge (Figs. 18–24). This area has a relatively thick section of sediment with numerous faults, resulting in a well-defined fault-controlled topography. Several large-scale channels are seen on Figures 18 through 20 leading from the Galapagos Ridge to the Guatemala Basin. Site 503 is located on a relatively smooth, thick section of sediment, which is acoustically stratified but which grades into acoustically transparent sediment toward the east. The transparent section is probably composed of slumped and otherwise deformed sediment.

Our trip from Site 503 to Salinas, Ecuador, went over the Galapagos Ridge, which shows relatively thick, faulted sediment between basement highs (Figs. 22, 23), but the sediment section becomes thinner near the Galapagos Islands (Figs. 24, 25). The sediment section becomes thicker and less faulted southeast of the Galapagos Islands (Figs. 25, 26).

The track continues to the northwest escarpment on the southern end of Carnegie Ridge. Sediment on this ridge has variable thickness and is in places highly faulted (Fig. 27); in other places it is very smooth (Fig. 28). Our track took us from Carnegie Ridge across the northern portion of the Peru-Chile Trench (Fig. 29). Unfortunately, we did not get a good profile of the trench floor. Sediment is clearly slumped and faulted on the outer trench wall and a small perched basin is seen on the inner trench wall. The seismic systems were turned

Table 1. Navigation data, Leg 68.

Day	Month	Year	Time	Latitude Degree	Latitude Minute	Longitude Degree	Longitude Minute	Distance	Actual Speed	Actual Course	Drift Speed	Drift Heading	Dead Reckoning Speed	Dead Reckoning Course	Comments[a]
14	8	1979	*1050	12	43.0	−71	26.0	1636.2	0.4	163	0.4	163	0.0	0	DEP
14	8	1979	1050	12	43.0	−71	26.0	1636.2	6.7	265	0.4	163	6.8	268	U/W
14	8	1979	1055	12	43.0	−71	26.6	1636.7	8.9	266	0.4	163	9.0	268	C/S
14	8	1979	1109	12	42.8	−71	28.7	1638.8	9.0	259	0.4	163	9.0	261	C/C
14	8	1979	1116	12	42.6	−71	29.7	1639.9	9.8	259	0.4	163	9.8	261	C/S
14	8	1979	1142	12	41.8	−71	34.0	1644.1	9.0	259	0.4	163	9.0	261	C/S
14	8	1979	*1202	12	41.2	−71	37.0	1647.1	9.2	261	0.2	254	9.0	261	SATL
14	8	1979	*1320	12	39.3	−71	49.1	1659.0	9.9	261	0.9	256	9.0	261	SATL
14	8	1979	1515	12	36.2	−72	8.3	1678.1	10.7	259	0.9	256	9.8	259	C/C
14	8	1979	*1526	12	35.8	−72	10.3	1680.0	10.2	257	0.5	214	9.8	259	SATL
14	8	1979	*1710	12	31.8	−72	27.9	1697.7	10.8	259	1.0	259	9.8	259	SATL
14	8	1979	*2136	12	22.7	−73	15.9	1745.4	10.6	260	0.8	275	9.8	259	SATL
14	8	1979	*2200	12	22.0	−73	20.2	1749.6	10.6	263	0.8	275	9.8	262	C/C
14	8	1979	*2222	12	21.5	−73	24.1	1753.5	10.5	262	0.7	258	9.8	262	SATL
14	8	1979	*2322	12	20.0	−73	34.7	1764.0	10.8	262	1.0	263	9.8	262	SATL
14	8	1979	*2346	12	19.4	−73	39.1	1768.3	10.1	261	0.4	247	9.8	262	SATL
15	8	1979	*0010	12	18.8	−73	43.2	1772.4	10.7	261	0.9	254	9.8	262	SATL
15	8	1979	*0102	12	17.4	−73	52.6	1781.6	10.6	261	0.8	246	9.8	262	SATL
15	8	1979	*0134	12	16.5	−73	58.3	1787.3	11.0	260	1.3	246	9.8	262	SATL
15	8	1979	*0432	12	10.9	−74	31.3	1820.0	10.9	260	1.2	246	9.8	262	SATL
15	8	1979	*0902	12	2.6	−75	20.9	1869.2	11.0	262	1.2	265	9.8	262	SATL
15	8	1979	*1048	12	0.0	−75	40.5	1888.6	10.8	262	1.0	257	9.8	262	SATL
15	8	1979	*1230	11	57.3	−75	59.0	1906.9	10.8	261	1.0	255	9.8	262	SATL
15	8	1979	*1418	11	54.4	−76	18.6	1926.3	10.9	263	1.2	270	9.8	262	SATL
15	8	1979	*1604	11	52.0	−76	38.2	1945.6	11.0	263	1.2	274	9.8	262	SATL
15	8	1979	*1752	11	49.7	−76	58.3	1965.4	11.9	262	2.1	265	9.8	262	SATL
15	8	1979	2138	11	43.8	−77	43.6	2010.2	11.1	262	2.1	265	9.0	272	C/S
15	8	1979	2154	11	43.4	−77	46.6	2013.1	11.9	262	2.1	265	9.8	262	C/S
16	8	1979	*0014	11	39.8	−78	14.7	2040.8	12.0	264	2.2	274	9.8	262	SATL
16	8	1979	*0044	11	39.2	−78	20.8	2046.8	11.8	264	2.1	276	9.8	262	SATL
16	8	1979	*0158	11	37.8	−78	35.6	2061.4	11.2	261	1.4	256	9.8	262	SATL
16	8	1979	0222	11	37.1	−78	40.1	2065.9	11.2	255	1.4	256	9.8	255	C/C
16	8	1979	0352	11	32.8	−78	56.7	2082.7	10.5	200	1.4	256	9.8	193	C/C
16	8	1979	*0510	11	19.9	−79	1.5	2096.4	10.3	197	0.9	251	9.8	193	SATL
16	8	1979	0530	11	16.6	−79	2.5	2099.9	10.4	299	0.9	251	9.8	303	C/C
16	8	1979	0925	11	36.4	−79	38.7	2140.5	10.4	202	0.9	251	9.8	198	C/C
16	8	1979	1110	11	19.6	−79	45.6	2158.6	8.9	070	0.9	251	9.8	070	C/C
16	8	1979	*1144	11	21.3	−79	40.8	2163.7	9.3	070	0.5	242	9.8	070	SATL
16	8	1979	1200	11	22.1	−79	38.4	2166.1	9.3	066	0.5	242	9.8	066	C/C
16	8	1979	*1214	11	23.0	−79	36.4	2168.3	8.6	065	1.2	255	9.8	066	SATL
16	8	1979	1230	11	24.0	−79	34.3	2170.6	6.6	064	1.2	255	7.8	066	C/S
16	8	1979	1353	11	27.9	−79	25.9	2179.7	6.6	069	1.2	255	7.8	070	C/C
16	8	1979	*1358	11	28.1	−79	25.4	2180.2	6.4	063	1.7	278	7.8	070	SATL
16	8	1979	*1425	11	29.4	−79	22.8	2183.1	7.8	070	0.0	044	7.8	070	S502
16	8	1979	1425	11	29.4	−79	22.8	2183.1	0.0	044	0.0	044	0.0	0	STOP
20	8	1979	*0145	11	29.5	−79	22.7	2183.2	0.0	0	0.0	0	0.0	0	502A
23	8	1979	*2025	11	29.5	−79	22.7	2183.2	0.0	0	0.0	0	0.0	0	502B
25	8	1979	*1550	11	29.5	−79	22.7	2183.2	0.0	0	0.0	0	0.0	0	502C
27	8	1979	*2208	11	29.5	−79	22.7	2183.2	1.1	216	1.1	216	0.0	0	DEP
27	8	1979	2208	11	29.5	−79	22.7	2183.2	10.2	194	1.1	216	9.2	191	U/W
27	8	1979	2222	11	27.2	−79	23.3	2185.6	10.6	194	1.1	216	9.6	191	C/S
27	8	1979	*2348	11	12.4	−79	26.9	2200.8	10.6	193	1.0	212	9.6	191	SATL
28	8	1979	*0134	10	54.2	−79	31.2	2219.5	8.4	192	1.2	002	9.6	191	SATL
28	8	1979	*0446	10	28.0	−79	37.0	2246.3	10.9	190	1.3	184	9.6	191	STOP
28	8	1979	0446	10	28.0	−79	37.0	2246.3	1.3	184	1.3	184	0.0	0	STOP
3	9	1979	*0012	7	26.4	−79	50.1	2428.4	0.7	163	0.7	163	0.0	0	DEP
3	9	1979	0015	7	26.4	−79	50.1	2428.4	9.5	239	0.7	163	9.4	243	U/W
3	9	1979	0030	7	25.1	−79	52.2	2430.8	9.7	221	0.7	163	9.4	224	C/C
3	9	1979	0120	7	19.0	−79	57.5	2438.9	5.2	236	0.7	163	5.0	243	C/C
3	9	1979	0135	7	18.2	−79	58.5	2440.2	9.1	239	0.7	163	9.0	243	C/S
3	9	1979	*0234	7	13.6	−80	6.3	2449.2	9.1	242	0.2	187	9.0	243	SATL
3	9	1979	*0422	7	5.8	−80	20.9	2465.6	9.5	243	0.6	235	9.0	243	SATL
3	9	1979	0430	7	5.2	−80	22.0	2466.9	9.5	258	0.6	235	9.0	259	C/C
3	9	1979	*0838	6	56.8	−81	0.7	2506.2	9.6	256	0.7	224	9.0	259	SATL
3	9	1979	*1118	6	50.8	−81	25.8	2531.8	9.4	256	0.7	210	9.0	259	SATL
3	9	1979	*1332	6	45.7	−81	46.4	2552.9	10.2	257	1.2	246	9.0	259	SATL
3	9	1979	*2018	6	30.8	−82	53.9	2621.6	10.4	262	1.5	278	9.0	259	SATL
3	9	1979	2105	6	29.6	−83	2.0	2629.7	10.4	263	1.5	278	9.0	261	C/C
3	9	1979	*2140	6	28.9	−83	8.1	2635.8	9.9	260	0.9	255	9.0	261	SATL
3	9	1979	*2202	6	28.3	−83	11.7	2639.4	9.9	261	0.9	265	9.0	261	SATL
3	9	1979	2310	6	26.6	−83	22.8	2650.6	9.9	270	0.9	265	9.0	270	C/C
3	9	1979	*2322	6	26.6	−83	24.8	2652.6	9.9	269	0.9	258	9.0	270	SATL
3	9	1979	2330	6	26.6	−83	26.1	2653.9	9.9	260	0.9	258	9.0	260	C/C
4	9	1979	*1216	6	4.1	−85	31.7	2780.7	10.0	263	1.1	286	9.0	260	SATL

Table 1. (Continued).

Day	Month	Year	Time	Latitude Degree	Latitude Minute	Longitude Degree	Longitude Minute	Distance	Actual Speed	Actual Course	Drift Speed	Drift Heading	Dead Reckoning Speed	Dead Reckoning Course	Comments[a]
4	9	1979	*1240	6	3.6	−85	35.7	2784.7	9.8	261	0.9	274	9.0	260	SATL
4	9	1979	*1404	6	1.5	−85	49.4	2798.5	10.0	265	1.3	300	9.0	260	SATL
4	9	1979	*1444	6	0.9	−85	56.1	2805.2	9.6	261	0.6	279	9.0	260	SATL
4	9	1979	*1626	5	58.4	−86	12.3	2821.5	9.6	259	0.6	250	9.0	260	SATL
4	9	1979	*2112	5	49.9	−86	57.6	2867.4	9.8	260	0.8	264	9.0	260	SATL
4	9	1979	2215	5	48.2	−87	7.9	2877.7	9.8	259	0.8	264	9.0	259	C/C
4	9	1979	*2354	5	45.2	−87	23.9	2894.0	9.8	258	0.8	247	9.0	259	SATL
5	9	1979	*0140	5	41.6	−87	40.9	2911.3	9.8	257	0.9	231	9.0	259	SATL
5	9	1979	*0350	5	36.7	−88	1.6	2932.4	10.0	257	1.0	240	9.0	259	SATL
5	9	1979	*1028	5	21.8	−89	6.5	2998.7	10.0	259	1.0	260	9.0	259	SATL
5	9	1979	*1128	5	19.9	−89	16.4	3008.8	10.1	259	1.1	256	9.0	259	SATL
5	9	1979	*1152	5	19.1	−89	20.4	3012.8	9.9	259	0.9	263	9.0	259	SATL
5	9	1979	*1314	5	16.6	−89	33.8	3026.4	10.6	256	1.7	241	9.0	259	SATL
5	9	1979	*1340	5	15.5	−89	38.3	3031.0	10.2	260	1.2	272	9.0	259	SATL
5	9	1979	*1520	5	12.7	−89	55.1	3048.0	9.8	259	0.9	253	9.0	259	SATL
5	9	1979	*1704	5	9.3	−90	11.9	3065.1	9.8	257	0.8	240	9.0	259	SATL
5	9	1979	*2136	4	59.6	−90	55.4	3109.5	9.7	258	0.8	241	9.0	259	SATL
6	9	1979	*0938	4	34.5	−92	50.2	3226.6	10.0	258	1.0	248	9.0	259	SATL
6	9	1979	*1056	4	31.8	−93	2.9	3239.5	8.7	254	0.8	142	9.0	259	SATL
6	9	1979	*1124	4	30.7	−93	6.8	3243.6	9.6	258	0.7	247	9.0	259	SATL
6	9	1979	*1228	4	28.6	−93	16.9	3253.9	9.5	257	0.6	221	9.0	259	SATL
6	9	1979	*1250	4	27.8	−93	20.3	3257.3	9.7	257	0.8	232	9.0	259	SATL
6	9	1979	*1414	4	24.7	−93	33.6	3271.0	9.7	258	0.7	242	9.0	259	SATL
6	9	1979	1500	4	23.1	−93	40.9	3278.4	9.7	261	0.7	242	9.0	262	C/C
6	9	1979	*1558	4	21.6	−93	50.1	3287.7	9.6	261	0.6	241	9.0	262	SATL
6	9	1979	*2114	4	13.5	−94	39.9	3338.0	9.9	262	0.9	265	9.0	262	SATL
6	9	1979	*2226	4	11.9	−94	51.7	3349.9	9.7	264	0.8	284	9.0	262	SATL
6	9	1979	*2300	4	11.3	−94	57.2	3355.4	9.7	262	0.7	265	9.0	262	SATL
6	9	1979	2325	4	10.8	−95	1.2	3359.5	9.7	261	0.7	265	9.0	261	C/C
7	9	1979	*0004	4	9.8	−95	7.5	3365.8	9.6	261	0.6	261	9.0	261	SATL
7	9	1979	*0028	4	9.2	−95	11.3	3369.6	9.4	260	0.4	235	9.0	261	SATL
7	9	1979	0045	4	8.7	−95	13.9	3372.3	9.4	259	0.4	235	9.0	260	C/C
7	9	1979	*0150	4	6.8	−95	23.9	3382.4	10.1	259	1.1	255	9.0	260	SATL
7	9	1979	*0216	4	6.0	−95	28.2	3386.8	9.8	258	0.9	232	9.0	260	SATL
7	9	1979	0305	4	4.3	−95	36.0	3394.8	5.8	256	0.9	232	5.0	260	C/S
7	9	1979	*0322	4	3.9	−95	37.6	3396.4	3.6	279	2.0	042	5.0	260	SATL
7	9	1979	*0322	4	4.0	−95	38.2	3397.0	5.0	260	0.0	0	5.0	260	S503
7	9	1979	0322	4	4.0	−95	38.2	3397.0	0.0	0	0.0	0	0.0	0	STOP
13	9	1979	*1704	4	4.0	−95	38.2	3397.0	0.8	079	0.8	079	0.0	0	DEP
13	9	1979	1704	4	4.0	−95	38.2	3397.0	9.7	098	0.8	079	9.0	100	U/W
13	9	1979	1707	4	3.9	−95	37.7	3397.5	9.6	110	0.8	079	9.0	113	C/C
13	9	1979	*2032	3	52.4	−95	6.8	3430.4	9.7	110	0.8	078	9.0	113	SATL
13	9	1979	*2216	3	46.6	−94	51.0	3447.2	9.4	110	0.6	065	9.0	113	SATL
13	9	1979	*2304	3	44.0	−94	43.9	3454.8	9.5	110	0.7	070	9.0	113	SATL
13	9	1979	2310	3	43.7	−94	43.0	3455.7	9.5	112	0.7	070	9.0	115	C/C
14	9	1979	*0420	3	25.3	−93	57.3	3504.9	9.6	114	0.7	097	9.0	115	SATL
14	9	1979	*0948	3	4.1	−93	9.1	3557.5	9.4	117	0.5	149	9.0	115	SATL
14	9	1979	*1038	3	0.6	−93	2.1	3565.3	9.3	114	0.4	087	9.0	115	SATL
14	9	1979	*1116	2	58.2	−92	56.7	3571.2	9.9	114	0.9	109	9.0	115	SATL
14	9	1979	*1138	2	56.7	−92	53.4	35 4.8	9.6	114	0.6	101	9.0	115	SATL
14	9	1979	*1302	2	51.2	−92	41.1	3588.3	9.6	115	0.6	109	9.0	115	SATL
14	9	1979	*1326	2	49.6	−92	37.6	3592.1	9.7	114	0.7	105	9.0	115	SATL
14	9	1979	1700	2	35.4	−92	6.0	3626.7	7.7	114	0.7	105	7.0	115	C/S
14	9	1979	*2314	2	15.8	−91	22.1	3674.8	7.4	113	0.5	087	7.0	115	SATL
15	9	1979	*0038	2	11.7	−91	12.5	3685.2	7.0	113	0.3	035	7.0	115	SATL
15	9	1979	*0102	2	10.6	−91	9.9	3688.0	7.1	110	0.6	032	7.0	115	SATL
15	9	1979	0105	2	10.5	−91	9.6	3688.4	9.1	111	0.6	032	9.0	115	C/S
15	9	1979	*0310	2	3.6	−90	51.9	3707.3	9.4	111	0.8	051	9.0	115	SATL
15	9	1979	0816	1	46.7	−90	7.2	3755.1	7.4	110	0.8	051	7.0	115	C/S
15	9	1979	*0856	1	45.0	−90	2.6	3760.0	7.1	110	0.6	032	7.0	115	SATL
15	9	1979	*0942	1	43.1	−89	57.5	3765.4	7.8	110	1.1	074	7.0	115	SATL
15	9	1979	*1130	1	38.3	−89	44.2	3779.6	8.0	109	1.3	073	7.0	115	SATL
15	9	1979	*1212	1	36.5	−89	38.9	3785.2	6.6	115	0.4	301	7.0	115	SATL
15	9	1979	*1236	1	35.4	−89	36.5	3787.8	7.9	113	1.0	095	7.0	115	SATL
15	9	1979	*1438	1	29.2	−89	21.6	3803.9	7.8	113	0.8	093	7.0	115	SATL
15	9	1979	*1624	1	23.9	−89	8.9	3817.7	7.4	113	0.5	083	7.0	115	SATL
15	9	1979	*2032	1	11.9	−88	40.8	3848.2	7.5	110	0.8	060	7.0	115	SATL
15	9	1979	*2114	1	10.1	−88	35.9	3853.4	7.1	112	0.4	042	7.0	115	SATL
15	9	1979	*2220	1	7.2	−88	28.6	3861.3	7.1	112	0.4	044	7.0	115	SATL
15	9	1979	*2308	1	5.4	−88	24.2	3866.1	7.4	115	0.4	112	7.0	115	SATL
15	9	1979	*2348	1	2.9	−88	18.8	3872.0	7.0	113	0.2	034	7.0	115	SATL
16	9	1979	*0014	1	1.7	−88	16.0	3875.1	7.2	116	0.2	139	7.0	115	SATL
16	9	1979	*0136	0	57.4	−88	7.1	3884.9	7.1	113	0.2	048	7.0	115	SATL
16	9	1979	*0348	0	51.2	−87	52.8	3900.5	6.6	116	0.4	281	7.0	115	SATL

Table 1. (Continued).

Day	Month	Year	Time	Latitude Degree	Latitude Minute	Longitude Degree	Longitude Minute	Distance	Actual Speed	Actual Course	Drift Speed	Drift Heading	Dead Reckoning Speed	Dead Reckoning Course	Comments[a]
16	9	1979	0528	0	46.4	−87	42.9	3911.5	8.6	116	0.4	281	9.0	115	C/S
16	9	1979	*0806	0	36.6	−87	22.5	3934.1	8.4	114	0.6	310	9.0	115	SATL
16	9	1979	*0848	0	34.2	−87	17.1	3940.1	8.3	116	0.7	283	9.0	115	SATL
16	9	1979	*0952	0	30.3	−87	9.1	3949.0	8.2	117	0.8	274	9.0	115	SATL
16	9	1979	*1032	0	27.8	−87	4.2	3954.5	8.6	116	0.4	285	9.0	115	SATL
16	9	1979	*1124	0	24.6	−86	57.5	3961.9	8.1	116	0.9	290	9.0	115	SATL
16	9	1979	*1200	0	22.5	−86	53.1	3966.8	8.1	117	1.0	282	9.0	115	SATL
16	9	1979	*1310	0	18.3	−86	44.7	3976.1	8.3	116	0.7	278	9.0	115	SATL
16	9	1979	*2126	0	−12.5	−85	42.9	4045.2	8.5	115	0.5	292	9.0	115	SATL
16	9	1979	*2204	0	−14.8	−85	38.0	4050.6	8.4	115	0.6	296	9.0	115	SATL
16	9	1979	*2300	0	−18.1	−85	30.9	4058.4	8.6	117	0.5	265	9.0	115	SATL
17	9	1979	*0046	0	−24.9	−85	17.4	4073.5	8.5	117	0.6	262	9.0	115	SATL
17	9	1979	*0242	0	−32.4	−85	2.7	4090.0	8.8	115	0.2	286	9.0	115	SATL
17	9	1979	*0428	0	−39.0	−84	48.7	4105.5	8.7	117	0.5	252	9.0	115	SATL
17	9	1979	*0900	0	−56.9	−84	13.7	4144.8	8.8	113	0.3	354	9.0	115	SATL
17	9	1979	*1036	−1	2.4	−84	0.7	4159.0	8.9	113	0.3	008	9.0	115	SATL
17	9	1979	*1058	−1	3.7	−83	57.7	4162.2	8.9	111	0.6	012	9.0	115	SATL
17	9	1979	*1222	−1	8.2	−83	46.1	4174.7	8.7	114	0.3	331	9.0	115	SATL
17	9	1979	*1246	−1	9.6	−83	42.9	4178.2	8.8	110	0.7	009	9.0	115	SATL
17	9	1979	*1408	−1	13.8	−83	31.6	4190.2	8.7	111	0.7	355	9.0	115	SATL
17	9	1979	*1554	−1	19.3	−83	17.3	4205.5	9.7	113	0.7	089	9.0	115	SATL
17	9	1979	1745	−1	26.3	−83	0.9	4223.4	5.7	112	0.7	089	5.0	115	C/S
17	9	1979	*2110	−1	33.5	−82	42.9	4242.7	5.9	110	1.0	085	5.0	115	SATL
17	9	1979	*2212	−1	35.6	−82	37.2	4248.8	6.6	112	1.6	103	5.0	115	SATL
17	9	1979	2220	−1	35.9	−82	36.4	4249.7	3.1	109	1.6	103	1.5	115	C/S
17	9	1979	2244	−1	36.3	−82	35.2	4250.9	6.6	112	1.6	103	5.0	115	C/S
17	9	1979	*2356	−1	39.3	−82	27.9	4258.8	6.5	113	1.5	105	5.0	115	SATL
18	9	1979	*0020	−1	40.3	−82	25.5	4261.4	6.0	112	1.0	095	5.0	115	SATL
18	9	1979	0048	−1	41.3	−82	22.9	4264.2	7.0	109	1.0	095	6.0	112	C/S
18	9	1979	0105	−1	42.0	−82	21.0	4266.2	10.0	110	1.0	095	9.0	112	C/S
18	9	1979	*0810	−2	6.5	−81	14.5	4337.0	9.5	105	1.3	042	9.0	112	SATL
18	9	1979	0828	−2	7.2	−81	11.7	4339.9	9.7	096	1.3	042	9.0	102	C/C
18	9	1979	*0845	−2	7.55	−81	9.04	4342.7	9.7	096	0.0	0	9.0	102	DR

[a] Symbols for comments: DR = dead reckoning; C/S = change speed; SATL = satellite; C/C = course change; STOP = stop; U/W = underway; DEP = depart; PORT = port; * = satellite fix.

off because of ship traffic before we completed the traverse up the inner trench wall.

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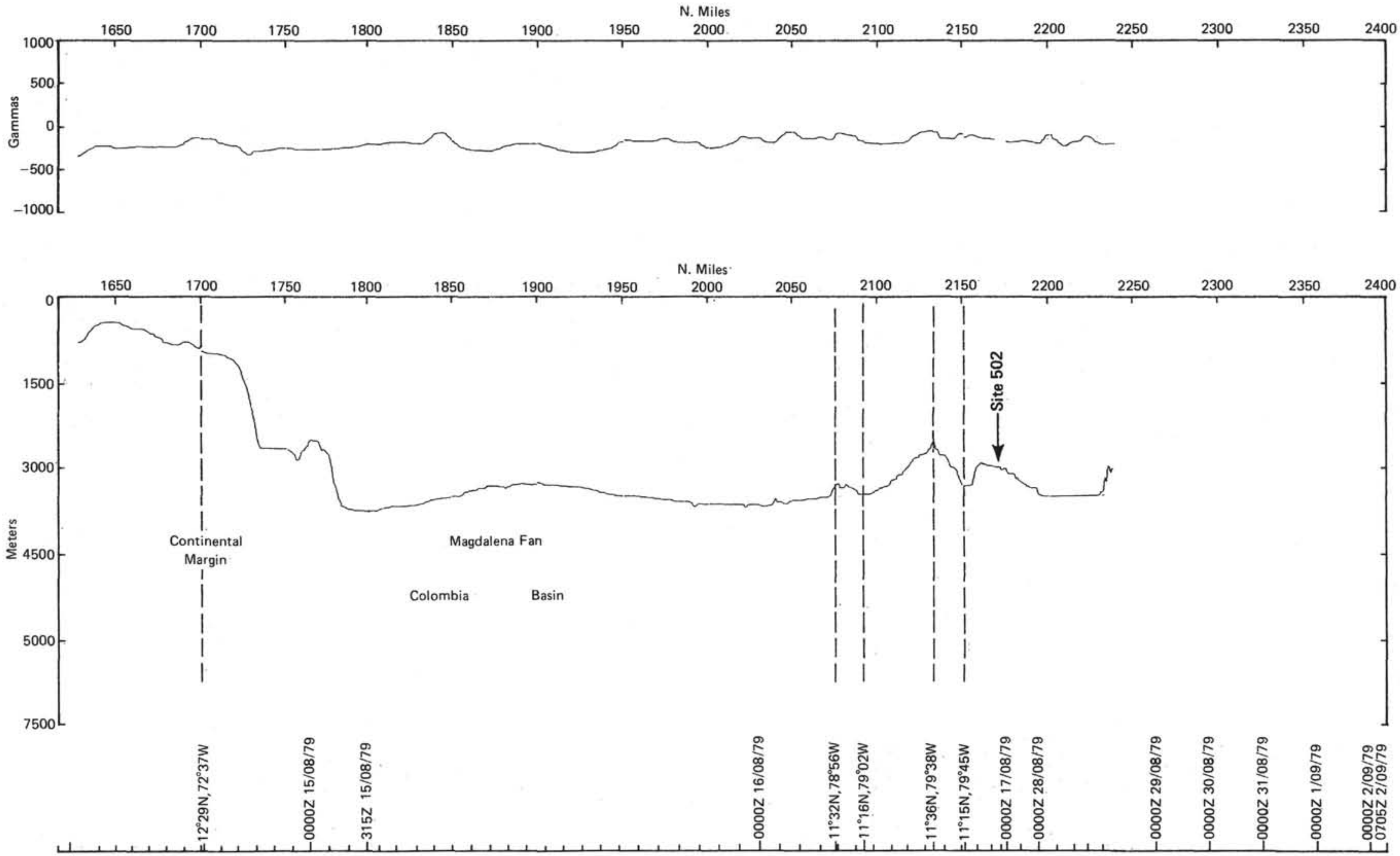


Figure 2. Profiles of magnetic anomalies (upper) and bathymetry (lower) for Leg 68.

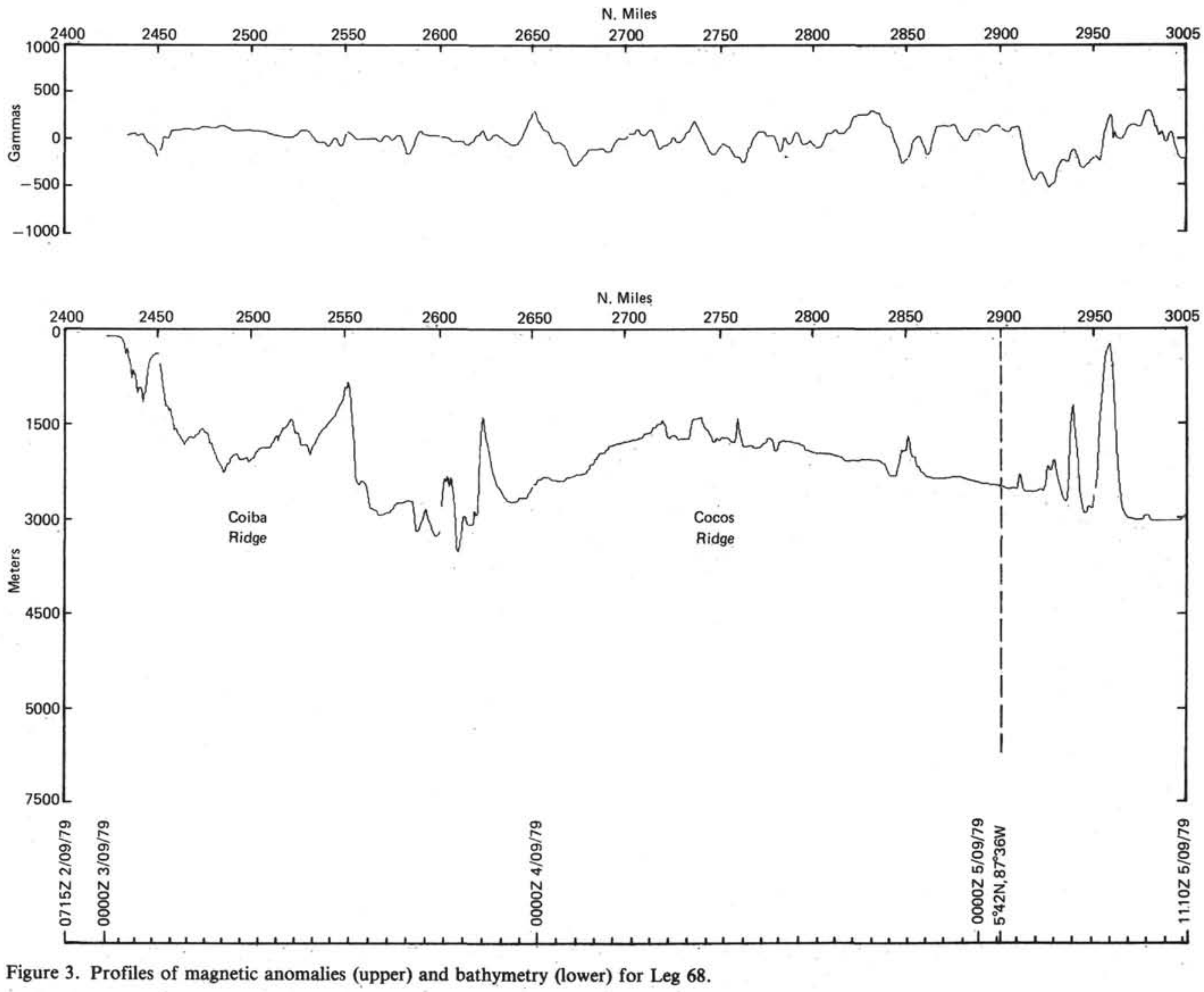


Figure 3. Profiles of magnetic anomalies (upper) and bathymetry (lower) for Leg 68.

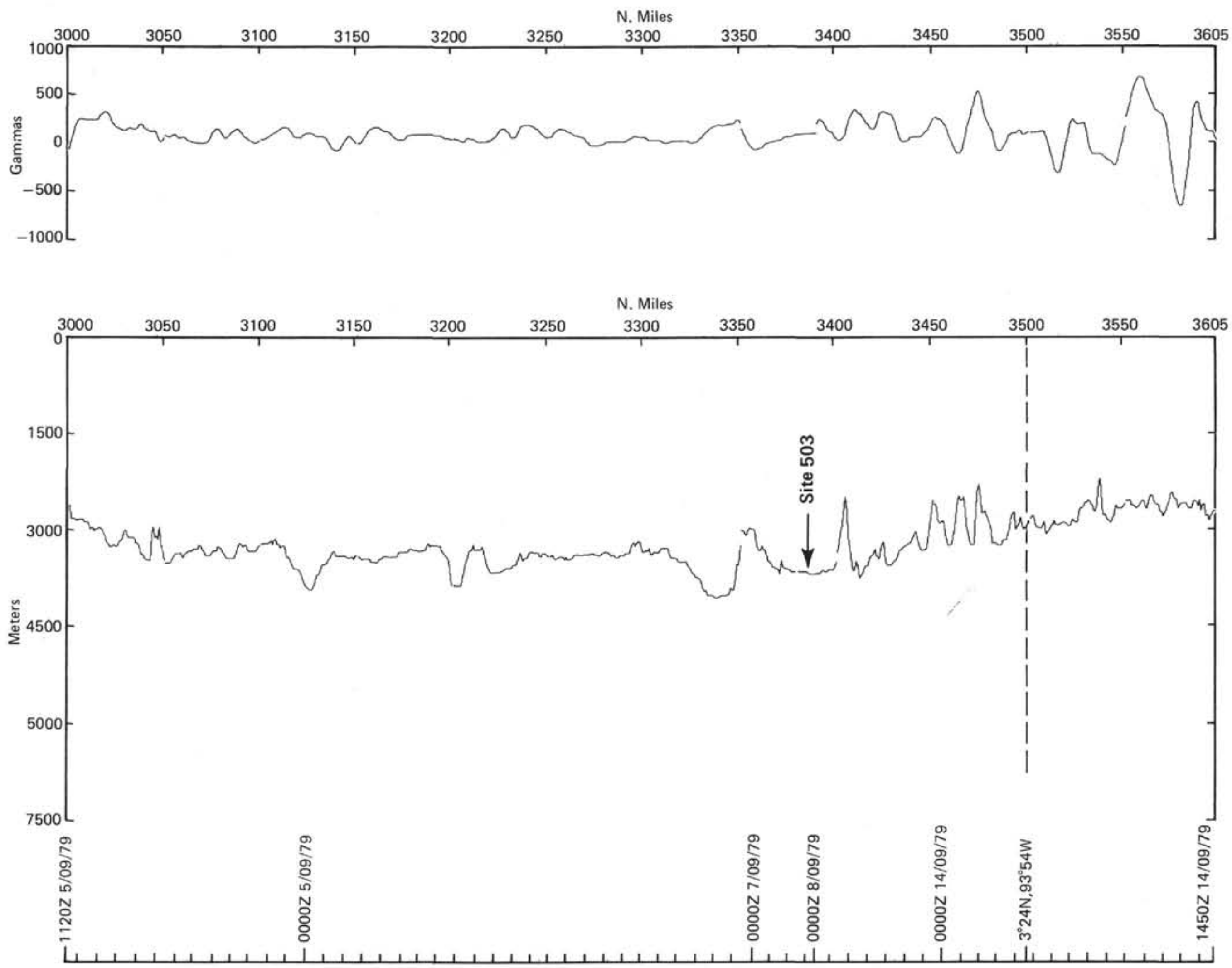


Figure 4. Profiles of magnetic anomalies (upper) and bathymetry (lower) for Leg 68.

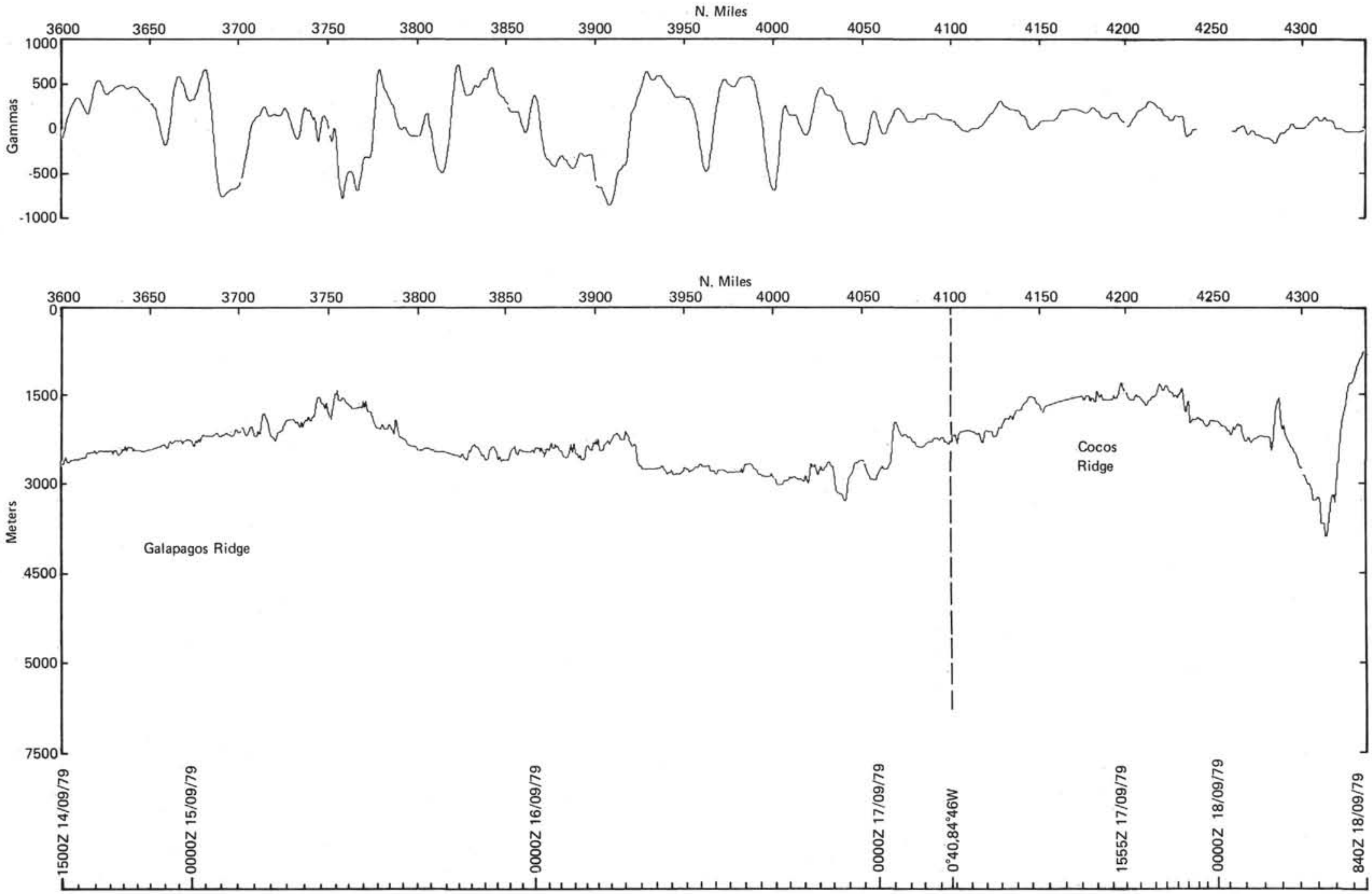
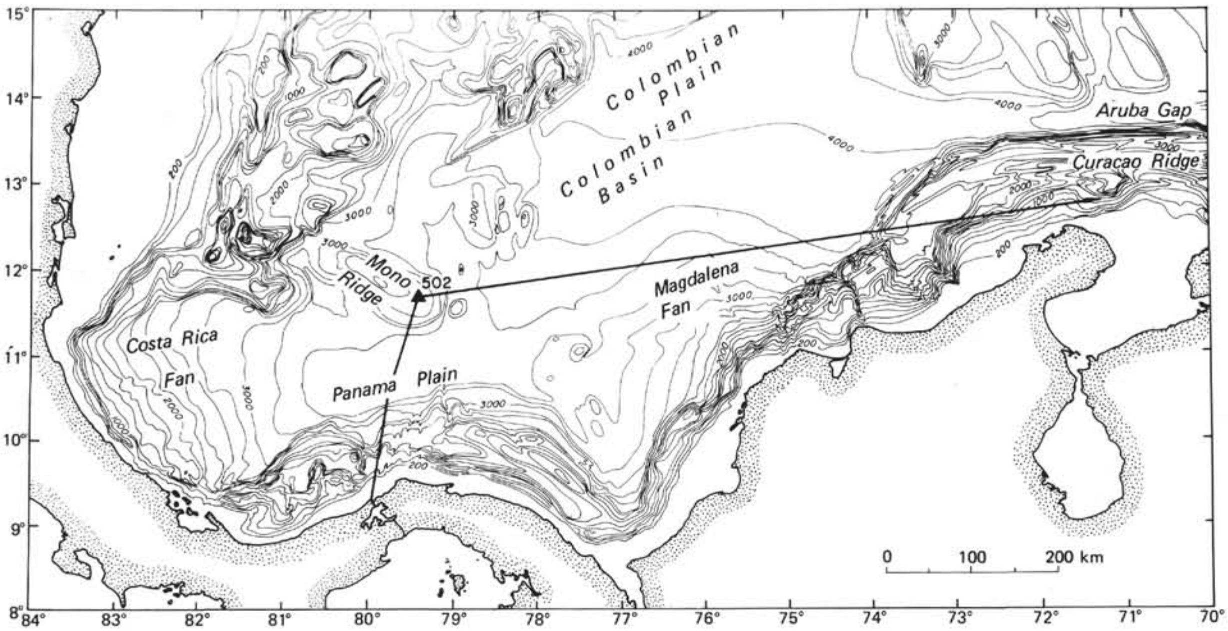


Figure 5. Profiles of magnetic anomalies (upper) and bathymetry (lower) for Leg 68.



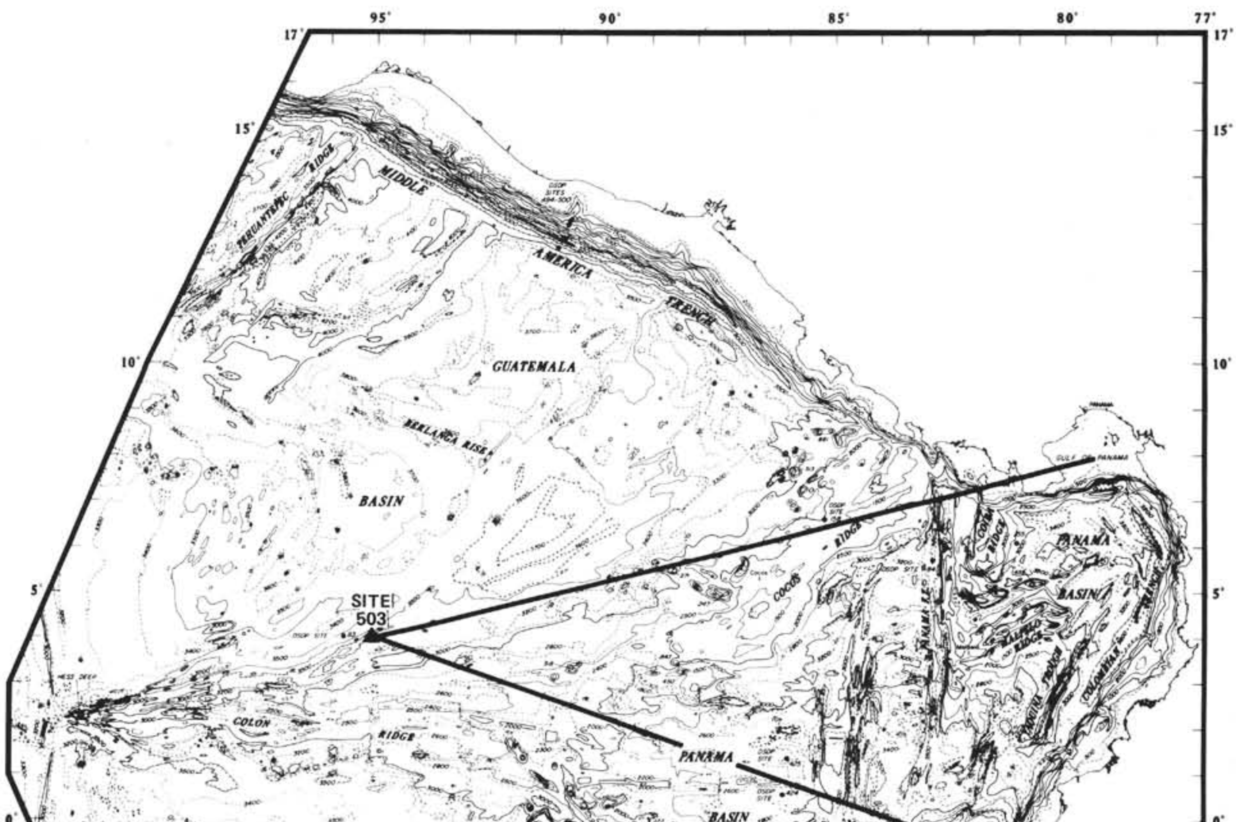


Figure 6. A. Bathymetric chart (depths in meters) of the region of the Caribbean traversed by *Glomar Challenger*, Leg 68 (after Holcombe, 1975). B. Bathymetric chart (depths in meters) of the region of the Pacific traversed by Leg 68 (after Chase et al., 1970, and Mammerickx et al., 1974).

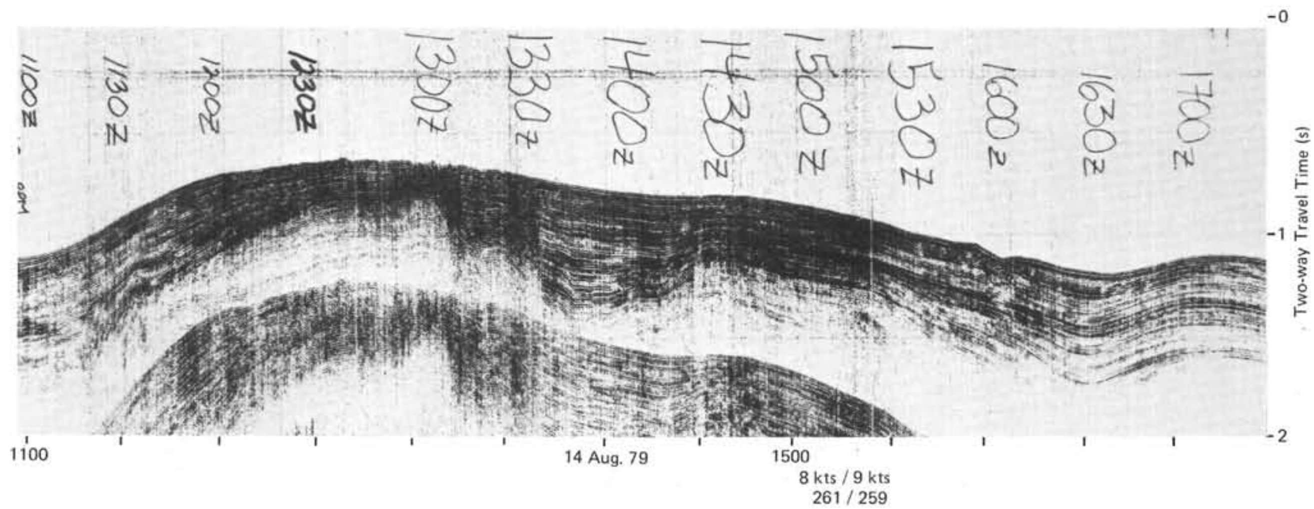


Figure 7. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

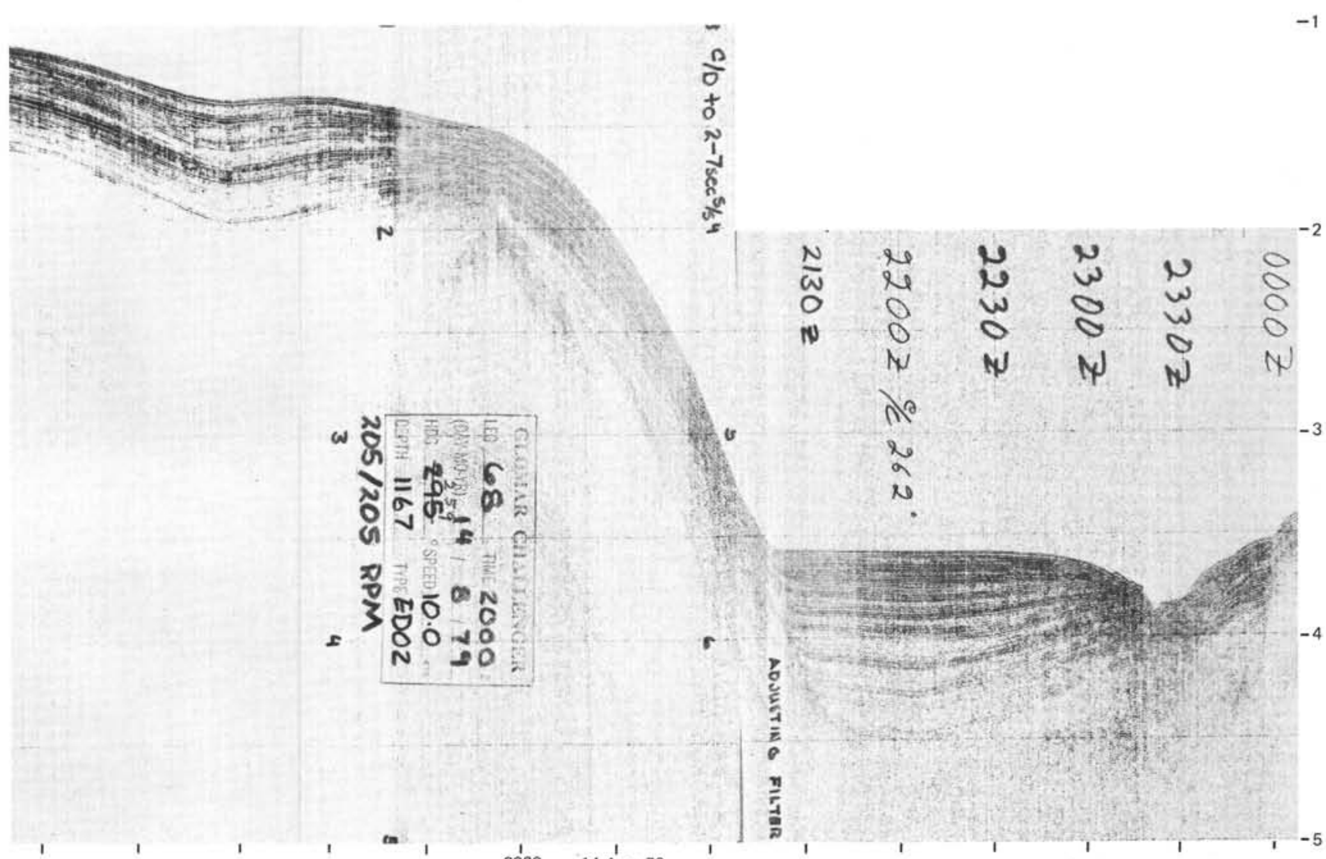


Figure 8. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

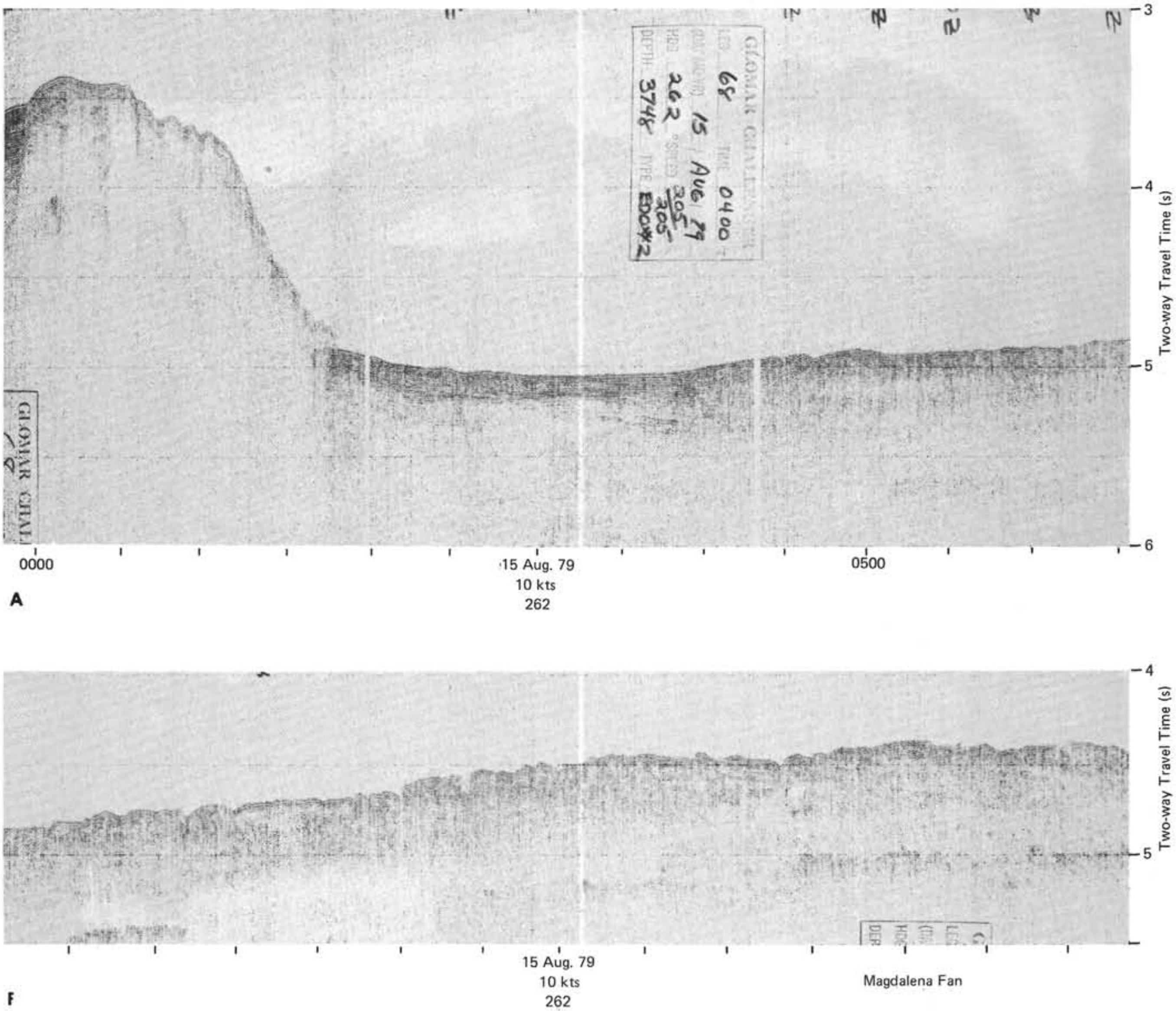


Figure 9. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

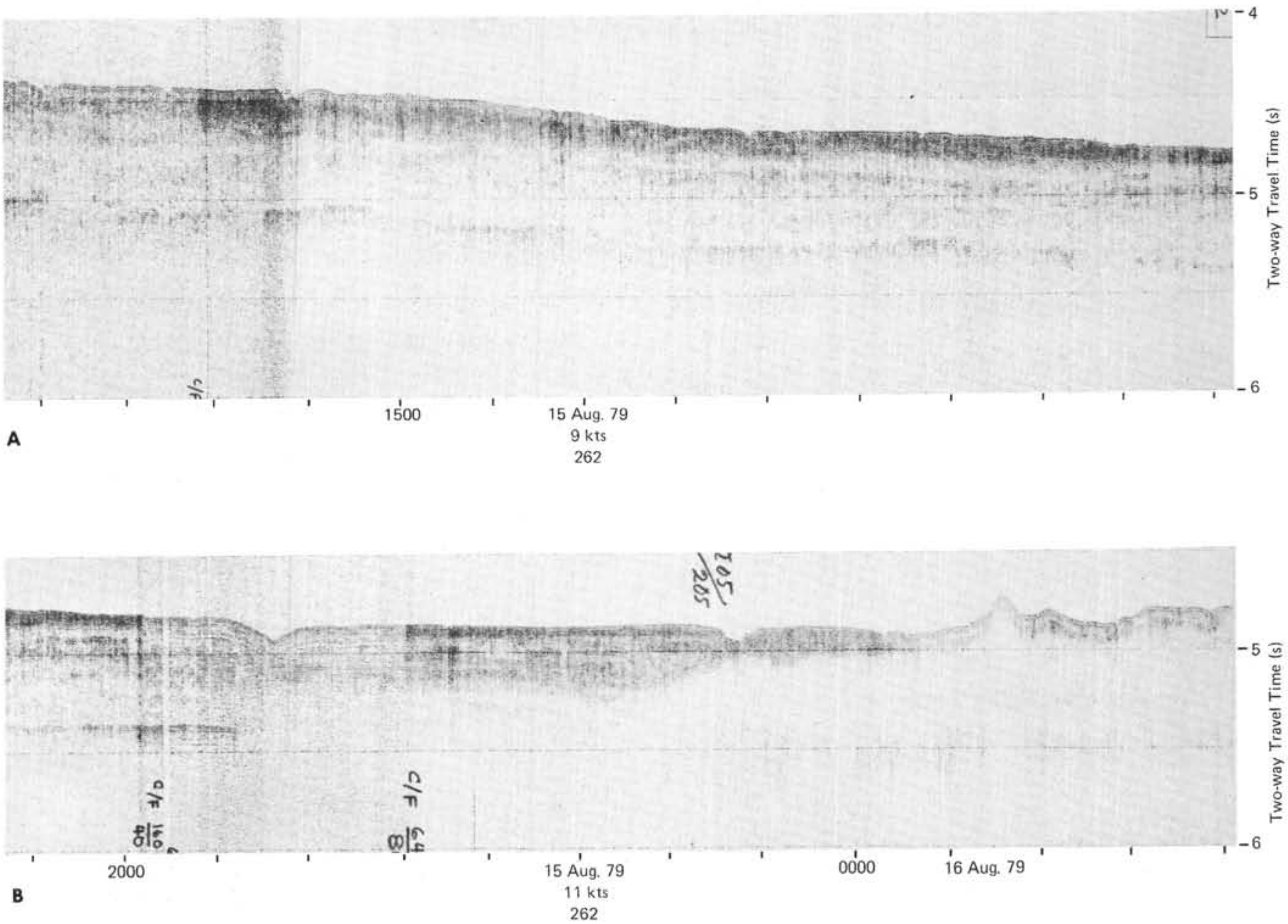


Figure 10. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

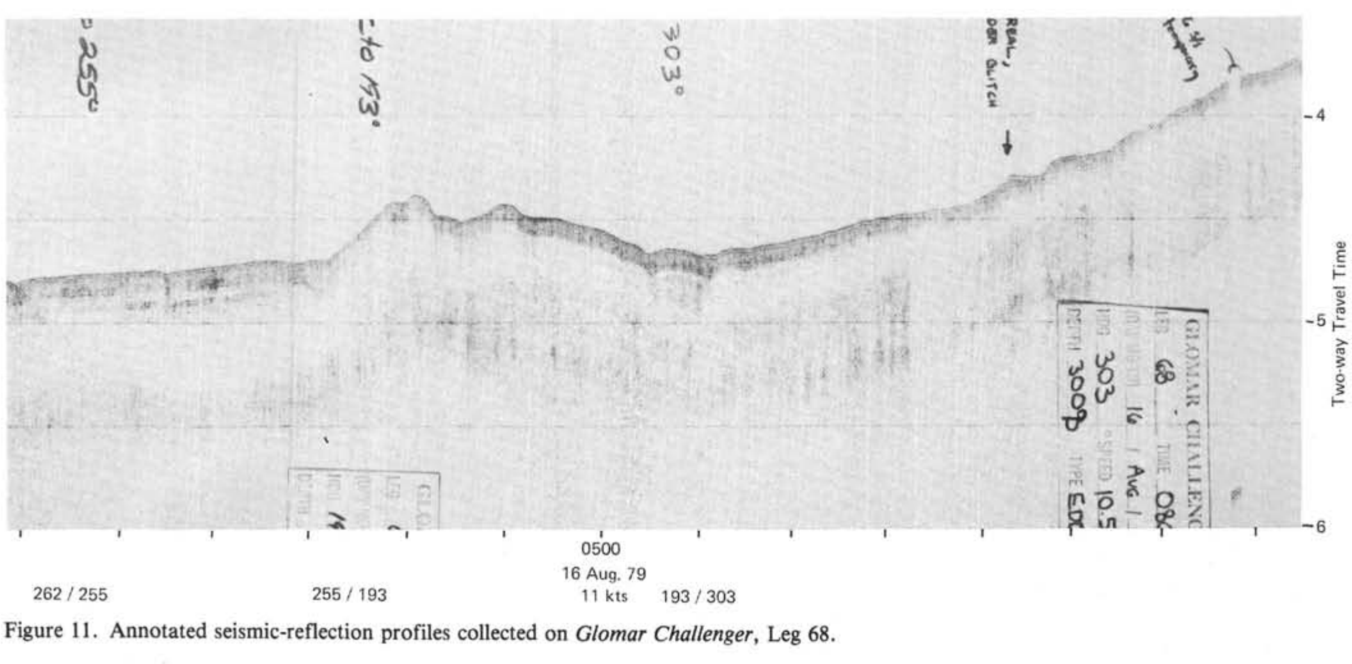


Figure 11. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

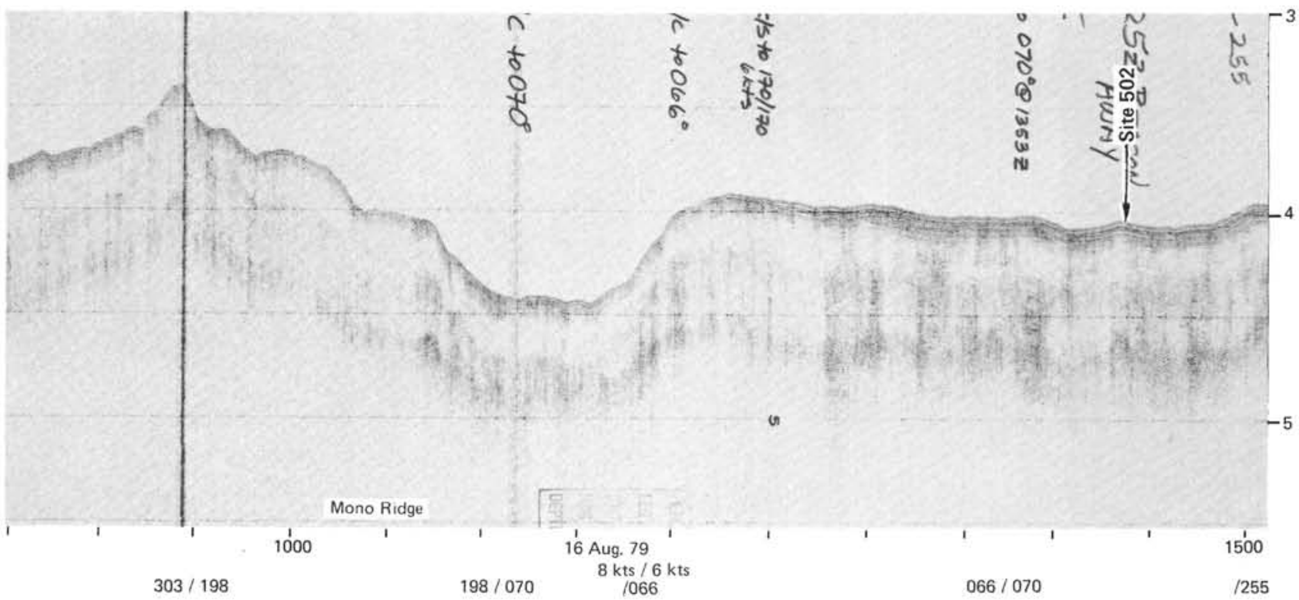


Figure 12. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

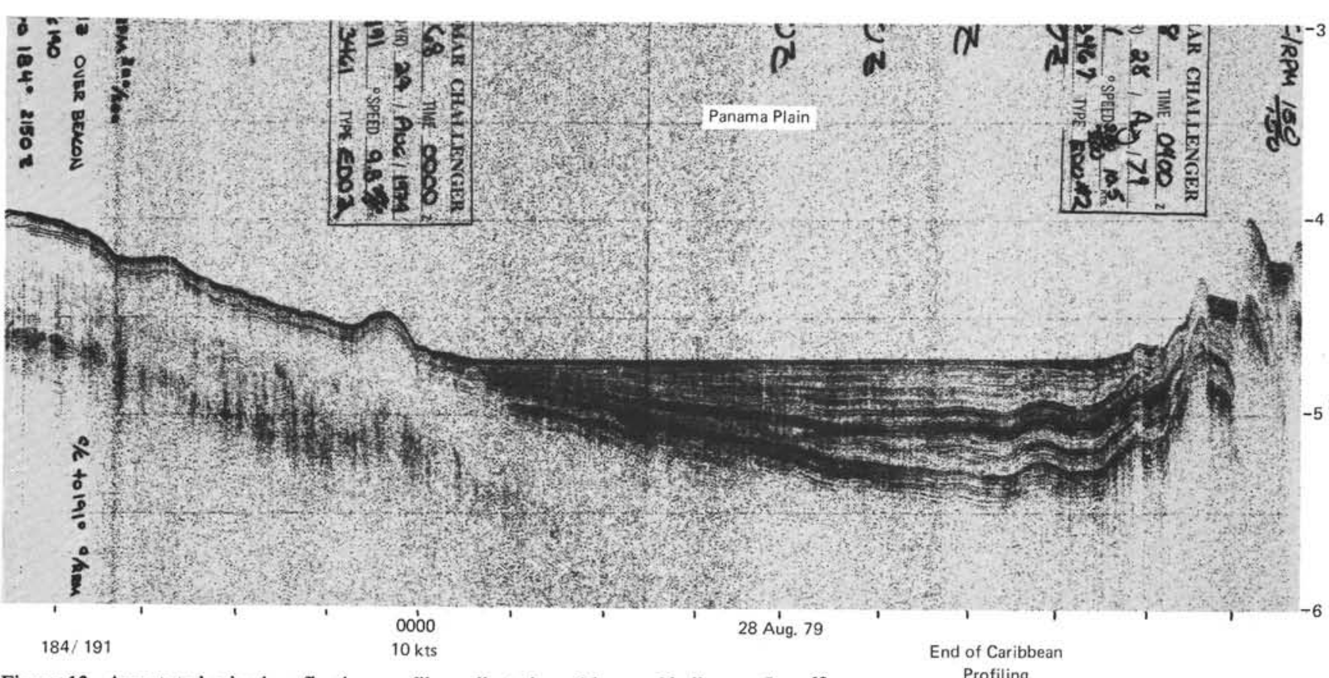


Figure 13. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

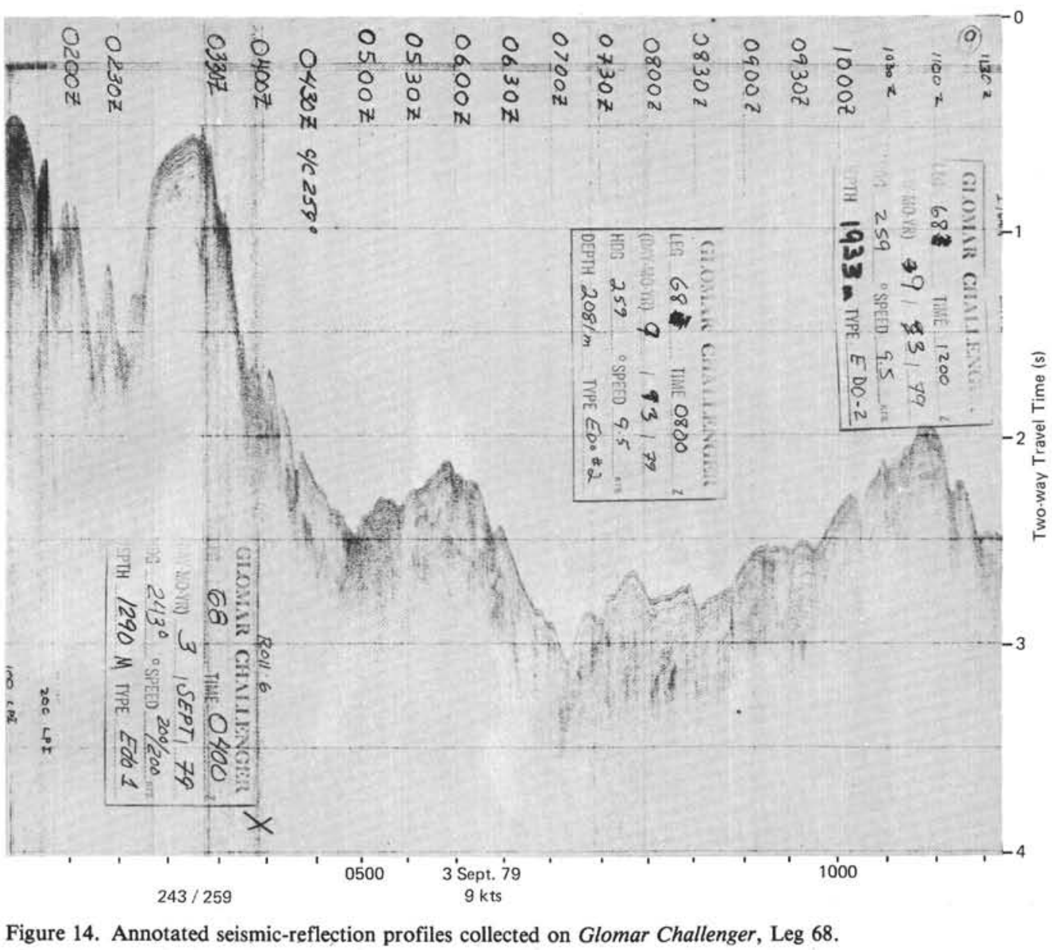


Figure 14. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

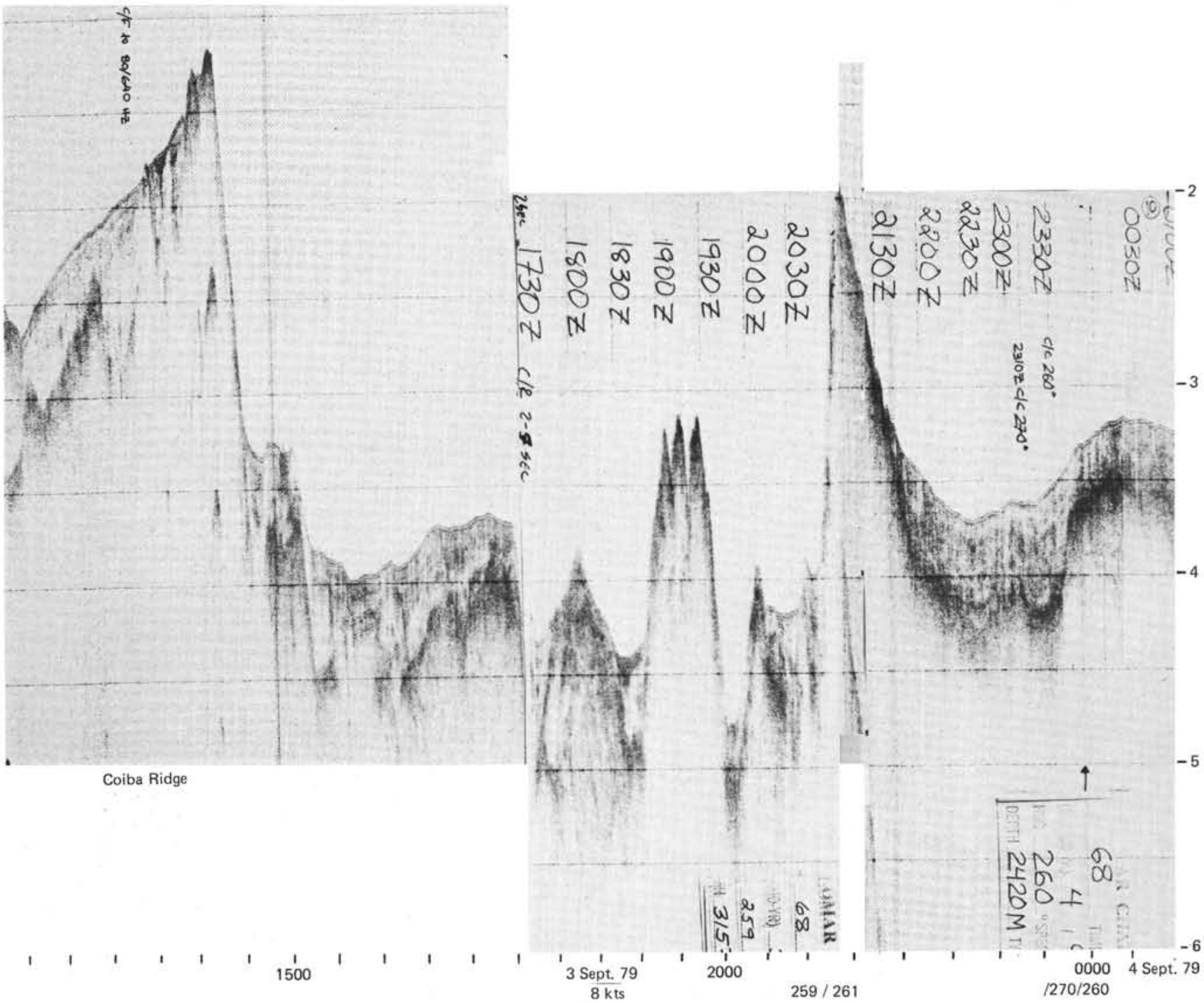


Figure 15. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

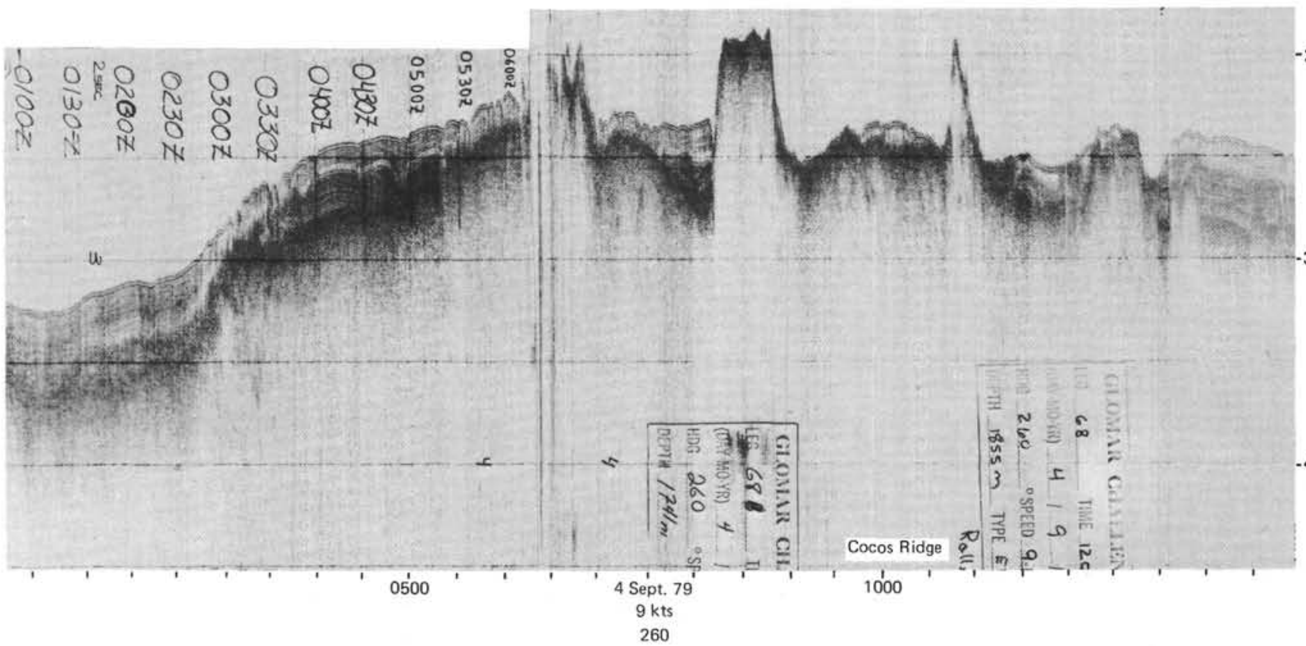


Figure 16. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

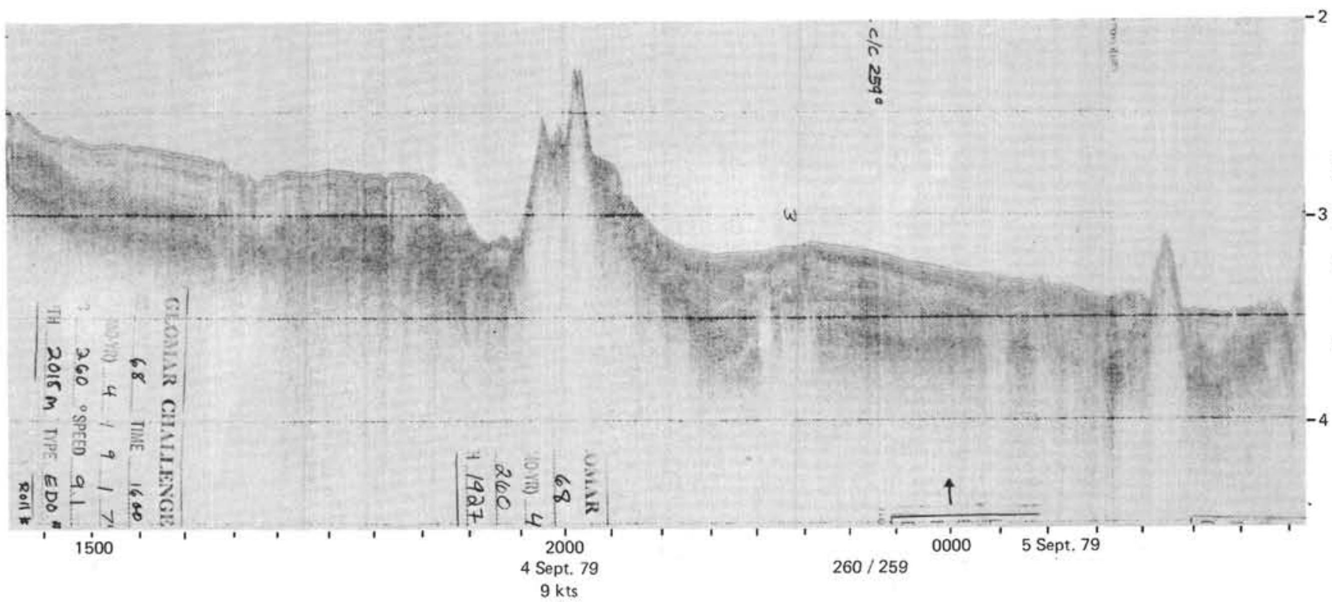


Figure 17. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

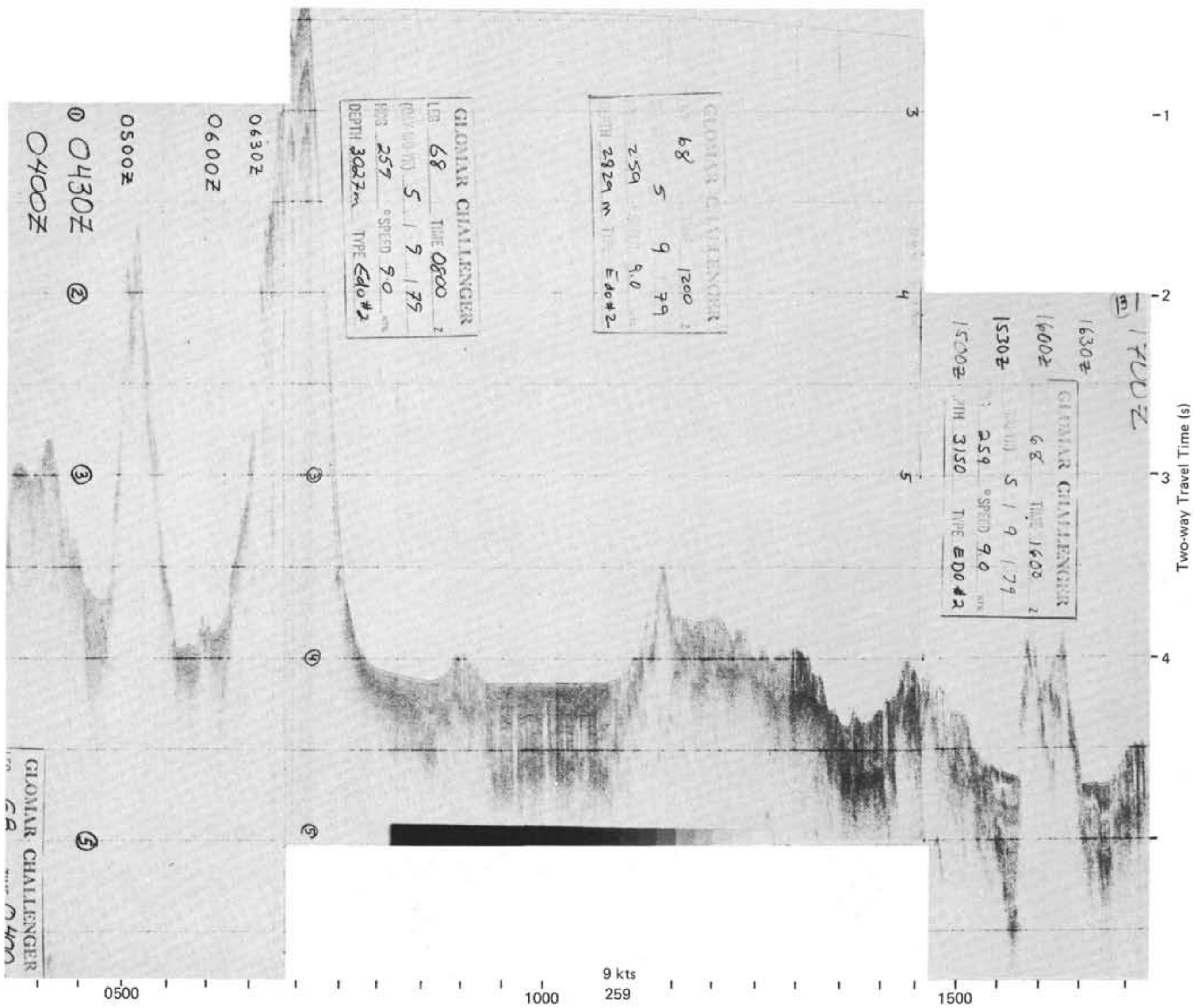


Figure 18. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

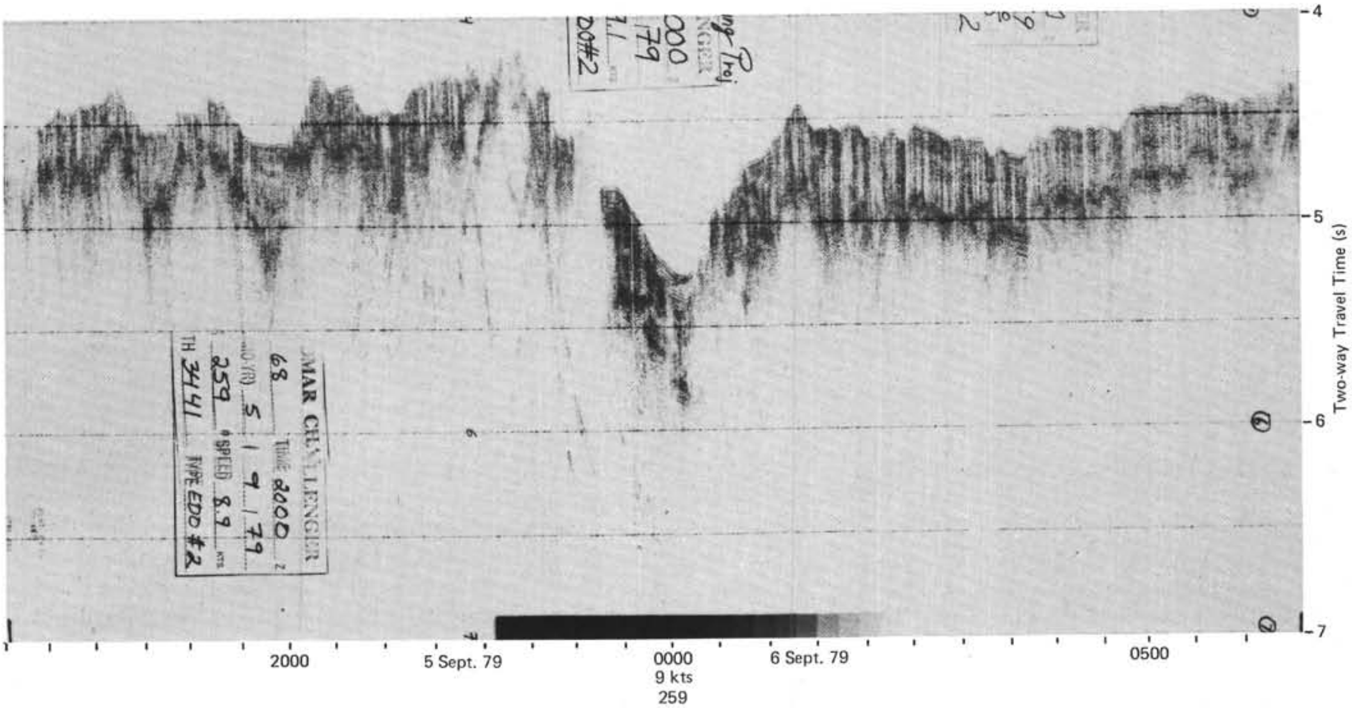


Figure 19. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

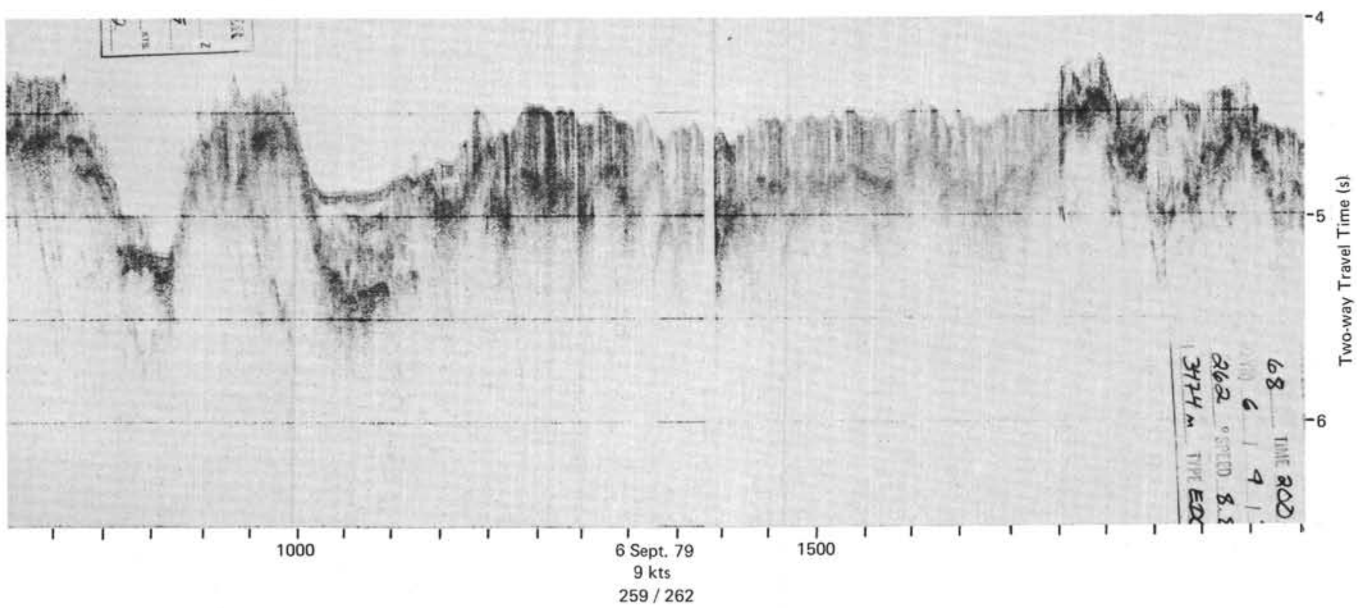


Figure 20. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

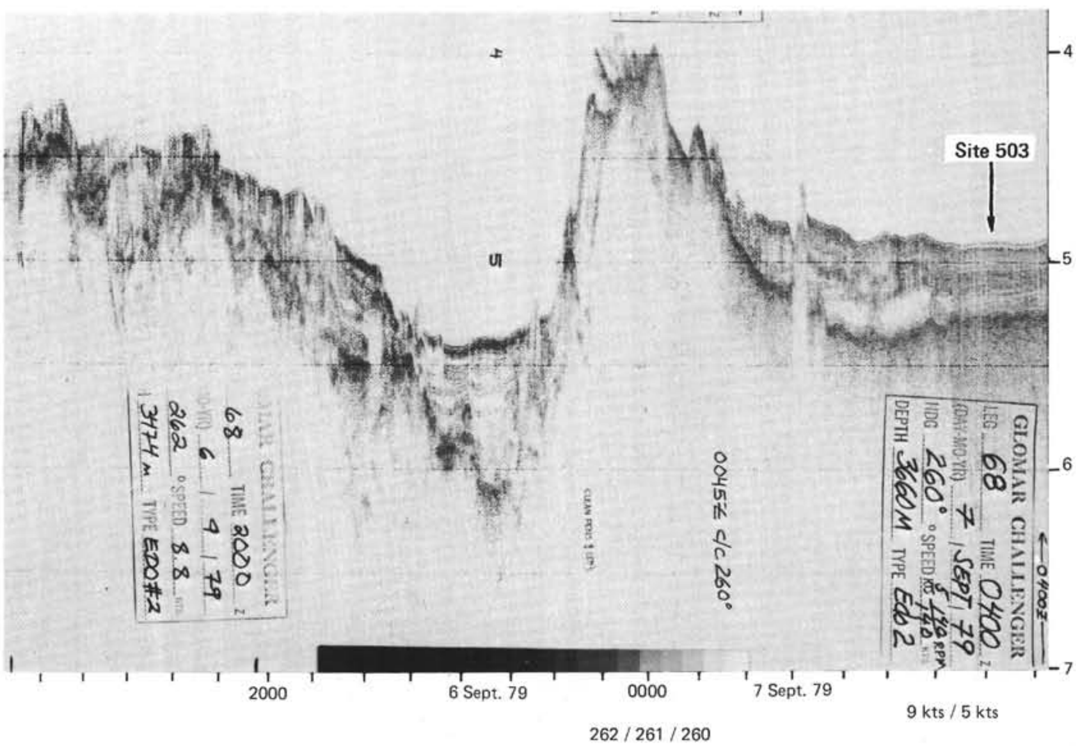


Figure 21. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

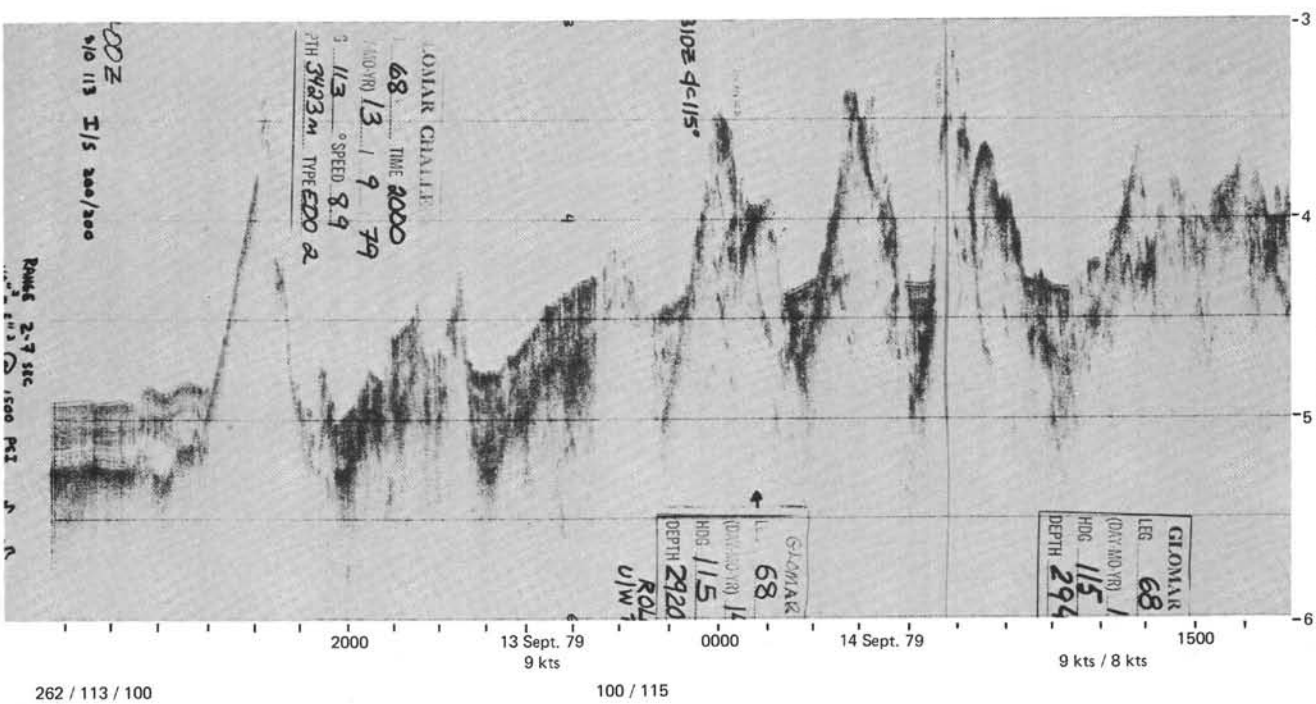
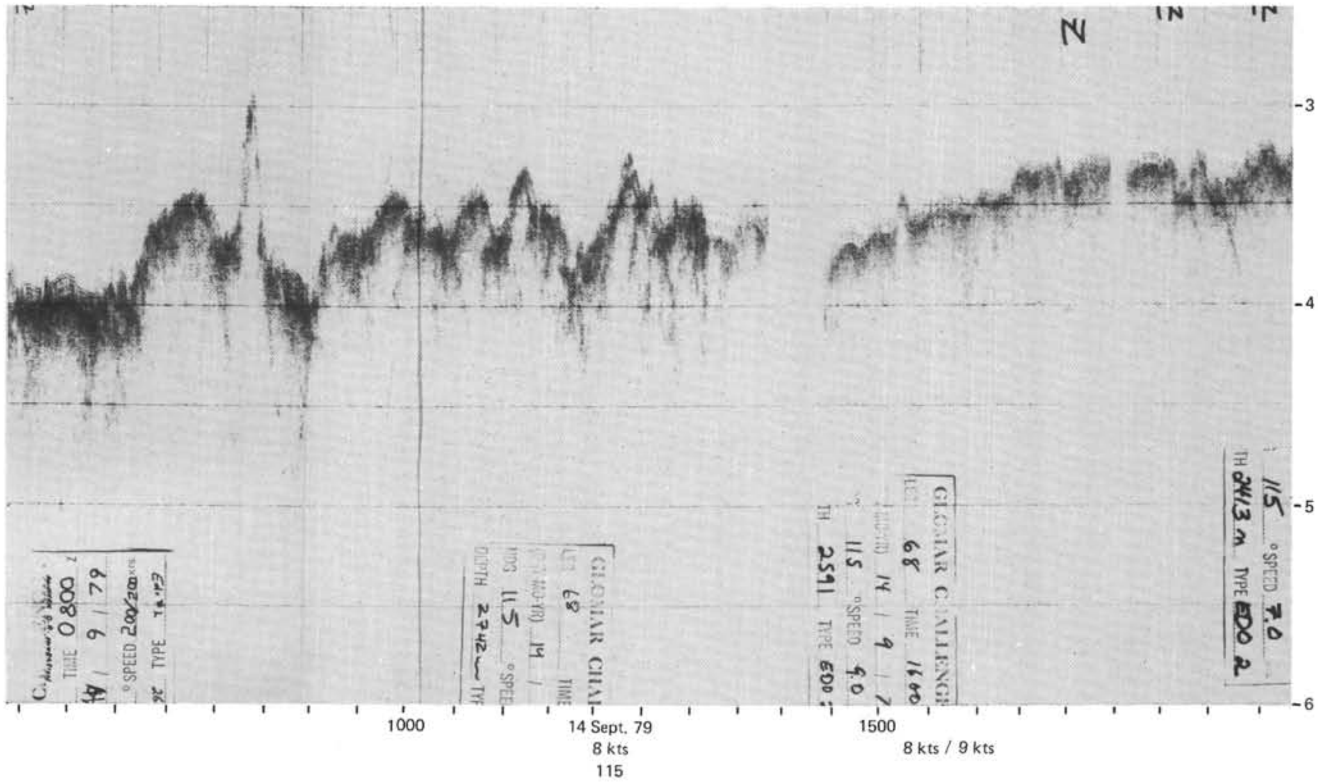


Figure 22. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.



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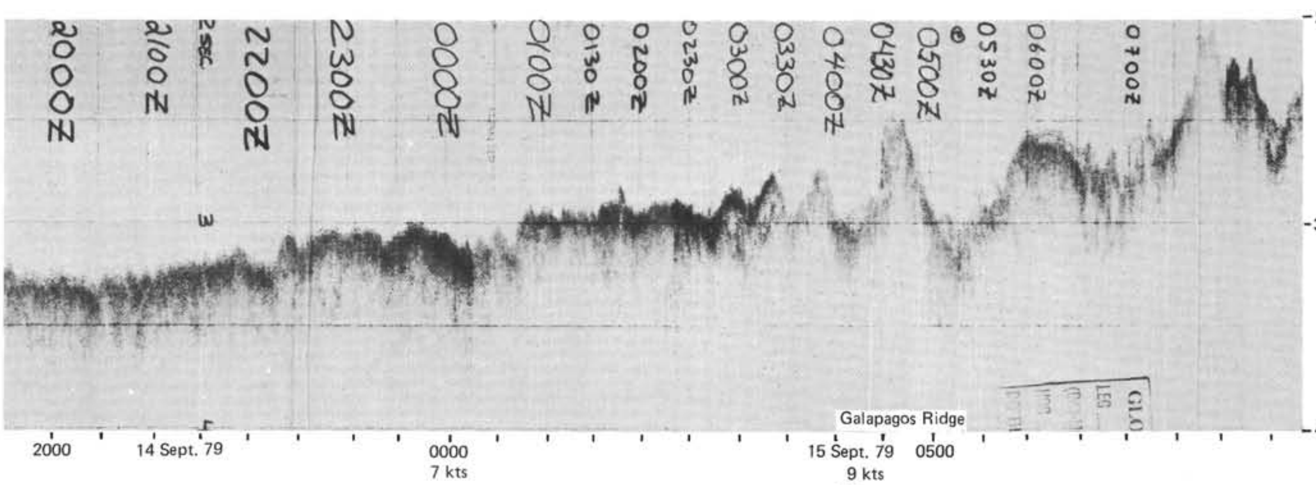


Figure 24. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

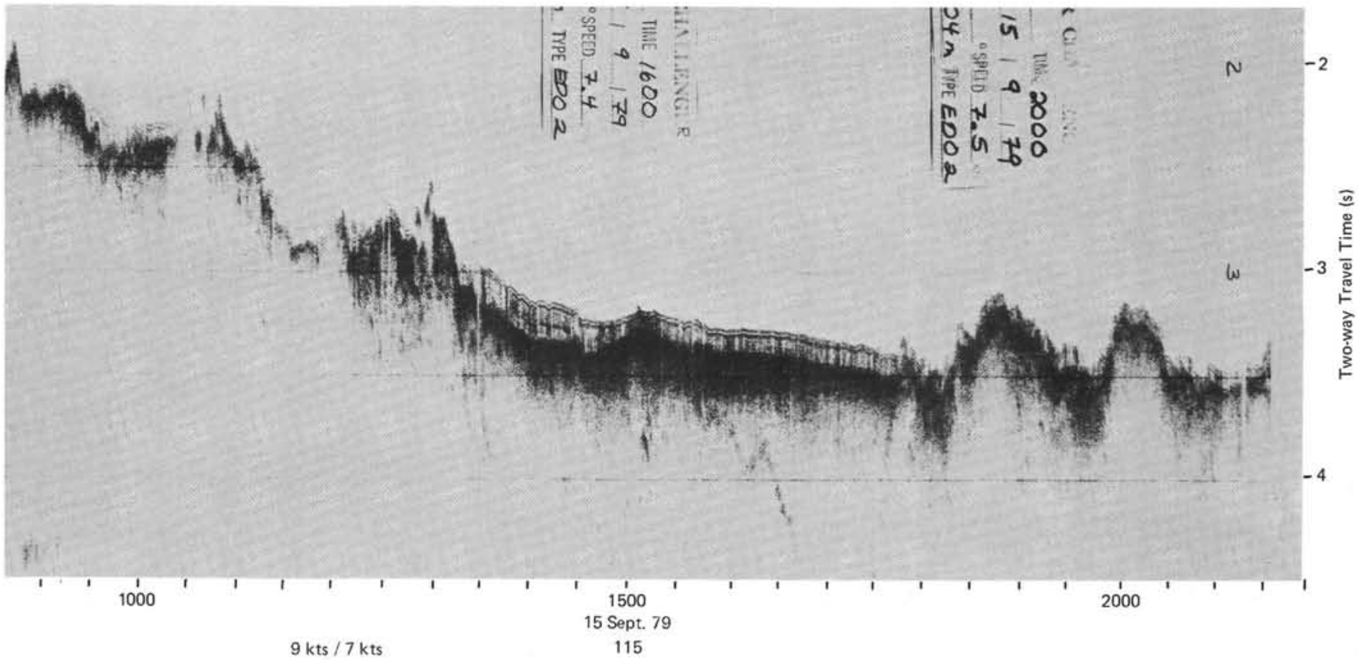


Figure 25. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

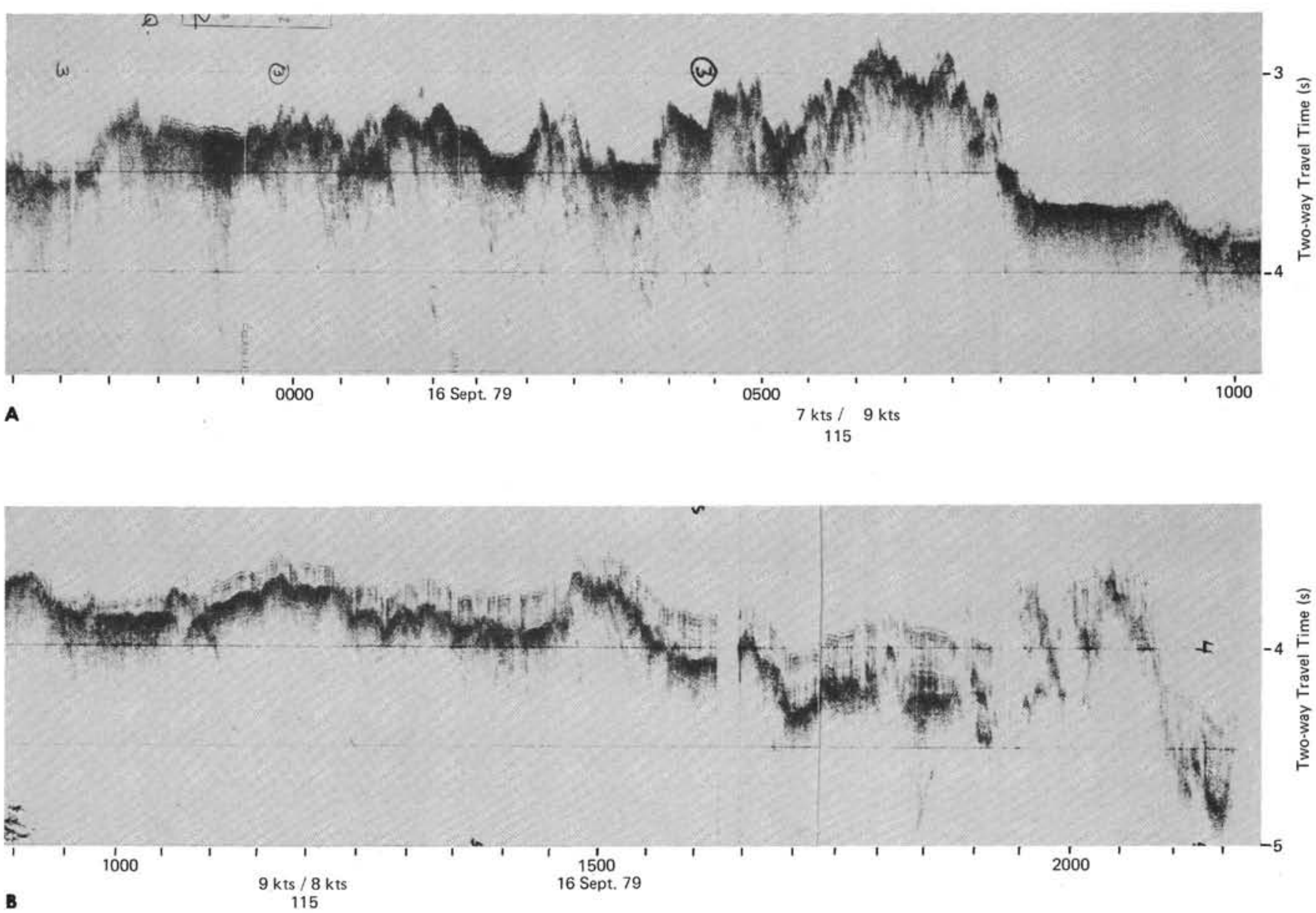


Figure 26. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.

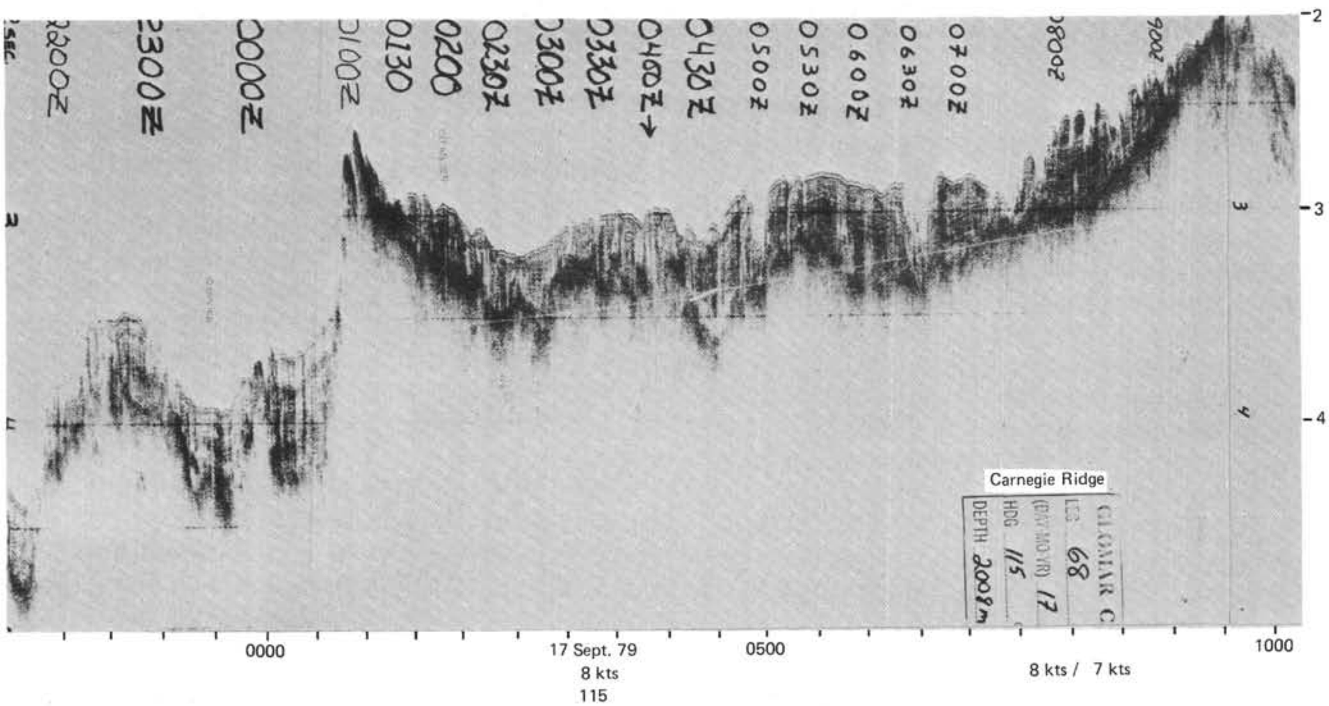
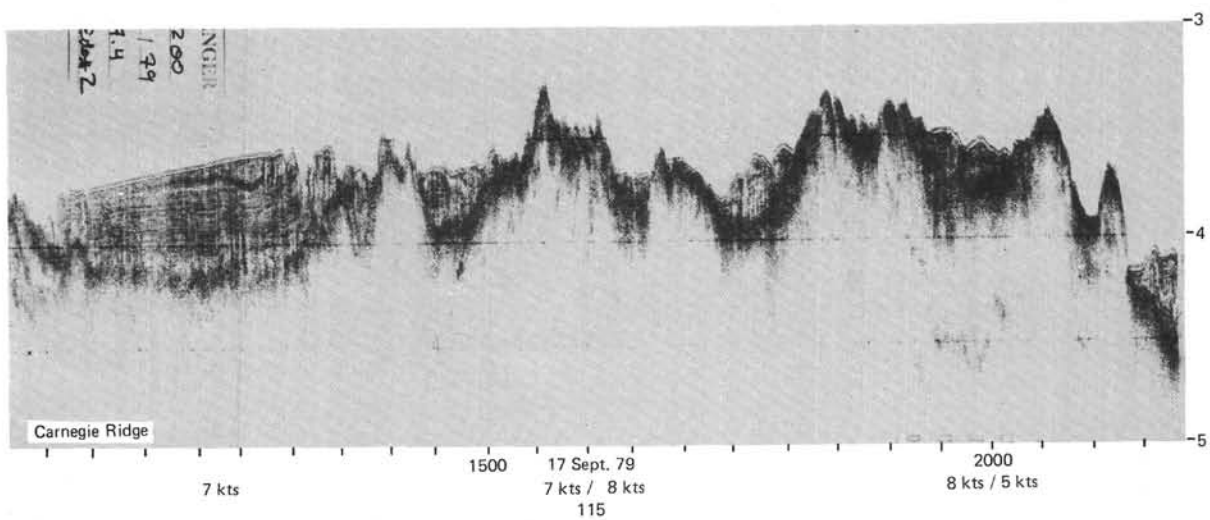


Figure 27. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.



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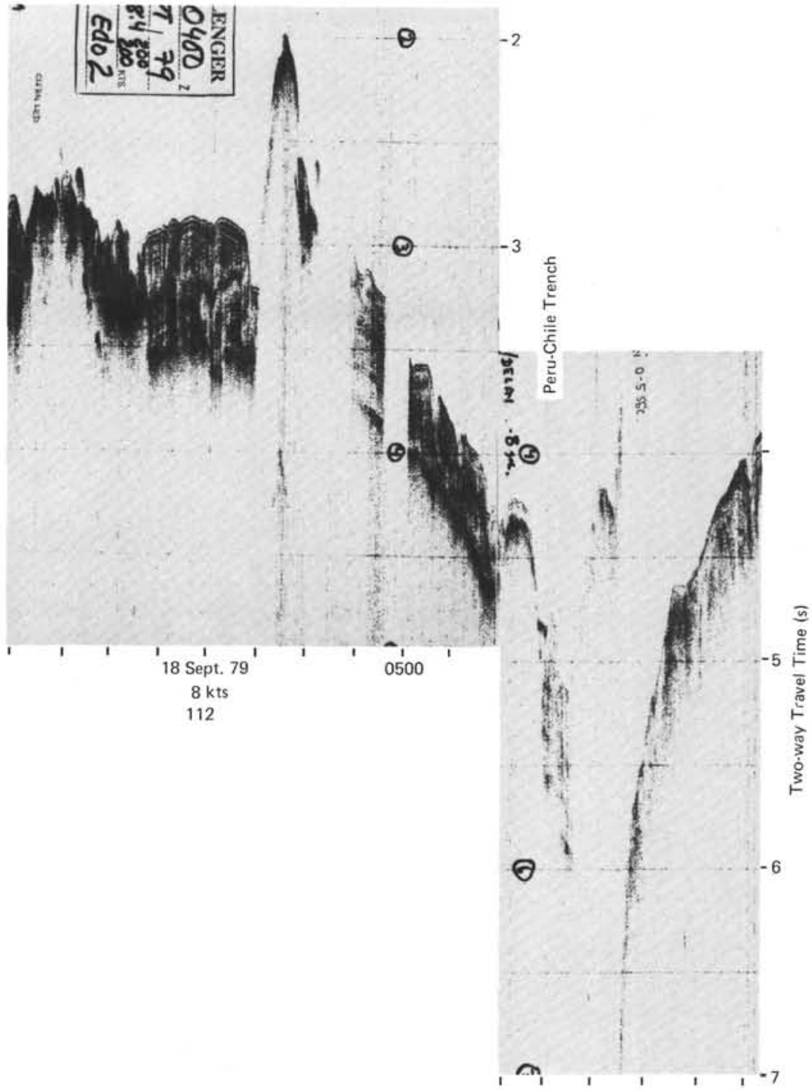

Figure 29. Annotated seismic-reflection profiles collected on *Glomar Challenger*, Leg 68.