60. GEOPHYSICAL PROFILES AND NAVIGATION, DEEP SEA DRILLING PROJECT LEG 62, CENTRAL NORTH PACIFIC OCEAN[1]

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ABSTRACT

Leg 62 of the Deep Sea Drilling Project traversed about 3900 nautical miles, from the Marshall to the Hawaiian Islands, collecting bathymetric, air-gun seismic-reflection, and magnetic data. Major geological features along the track line include the Marshall Island pedestal, Central Basin, Mid-Pacific Mountains, North Pacific Basin, and Hess Rise.

INTRODUCTION

Leg 62 of the Deep Sea Drilling Project traversed about 3900 nautical miles between Majuro Atoll in Micronesia and Honolulu, Hawai. The D/V *Glomar Challenger* left Majuro on July 29, 1978, and arrived in Honolulu on September 6.

We collected 12-kHz, 3.5-kHz, and air-gun continuous seismic-reflection profiles and total-field magnetometer measurements along the track lines. Progressive distance along the track, dates, hours, site numbers, and major bathymetric features are shown in Figure 1. Underway navigation information (Table 1) and plots prepared by the Geological Data Center, Scripps Institution of Oceanography, were used to locate the track. Satellite fixes, courses, and speeds were encoded on the ship from data in the underway geophysical log. The data were keypunched on shore, run through a navigation smoothing program, and subsequently edited on the basis of reasonable ship drift velocities and directions. The corrected navigation data were merged with the bathymetric and magnetic data. Satellite navigation errors are generally less than 1 nautical mile (Talwani et al., 1966).

Figures 2 through 8 show depth, distance along the track, dates and times, major bathymetric features, and magnetic anomalies. Figure 9 (plate in back pocket of this volume) includes photographic reproductions of original 5-sec-sweep air-gun seismic-reflection records. Vertical exaggerations, therefore, are greater than on the 10-sec records used in most previous DSDP reports. Depths in two-way travel time (seconds) are given along the edges of the profiles, and times, dates, and headings are at the bottom. Distances along the track in hundreds of nautical miles are at the top of the profiles. Sites drilled and major bathymetric features also are printed on Figure 9.

Sound sources used in generating the seismic-reflection data were two 40-in^3 air guns. Incoming signals were filtered through a Bolt filter-amplifier system and then recorded on dry-paper EDO recorders. Fire rate was at a 10-sec interval at all times, and sweep rates were 10 sec (on EDO recorder 1) and 5 sec (on EDO recorder 2). Hull-mounted transducers were the sound source for the 3.5- and 12-kHz profilers.

The magnetic-anomaly profiles in Figures 2 through 8 were derived by removing IGRF from the total-field measurements. Magnetic data produced at sea on a Geometrics magnetometer were recorded in the underway geophysical logbook at 5-min intervals. Depths taken from echo sounders (calculated at 1500 m/sec calibrated sound velocity) also were recorded in the logbook at 5-min intervals. Both types of data were edited on shore by the Geologic Data Center, Scripps Institution of Oceanography.

GEOPHYSICAL NARRATIVE

Marshall Island Pedestal

Underway geophysical records for Leg 62 begin a few miles north of Majuro Lagoon. The first of the major geological features crossed was the lower east flank of the Marshall Island chain (Figs. 2 and 9, mile 0–120). The three peaks at about 0, 45, and 90 miles are the lower flanks of Majuro, Aur, and Maloelop Atolls, respectively. Sediments over 1.0 sec in thickness underlie the sea floor between Majuro and Aur. About half of this sediment package occurs in a deeply incised, semi-transparent upper layer (Fig. 9). The lower unit has a smooth upper surface and exhibits closely spaced reflectors. Three flat-floored, channel-like features occur along this section of the profile, and the broad base of Maloelop Atoll shows very little sediment accumula-

[1] *Initial Reports of the Deep Sea Drilling Project*, Volume 62.

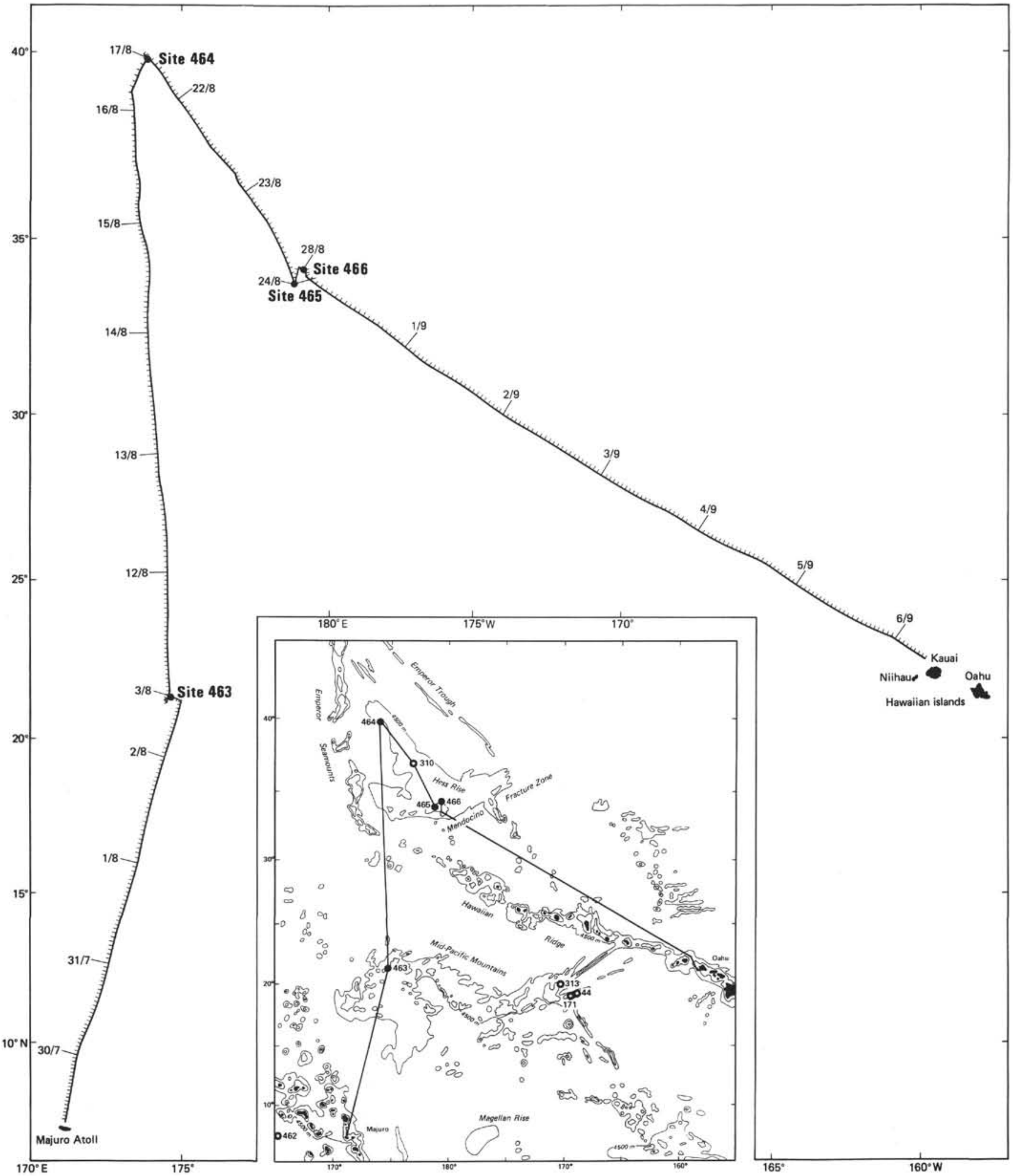

Figure 1. Map of the *Glomar Challenger* track line, DSDP Leg 62.

Table 1. Leg 62 underway navigation data.

			Latitude		Longitude		Actual Drift					Dr.			Drift		
Day	Mo.	Time	Deg.	Min.	Deg.	Min.	Dist.	Speed	Cse.	Speed	Hed.	Speed	Cse.	Cmnt.	Dist.	Time	No.
Majuro																	
29	7	* 5 0	7	16.00	171	10.00	0.0	7.4	11	1.7	212	9.0	15	SATL	0.0	0.0	3
		*1350	8	20.13	171	22.82	65.4	7.5	8	1.8	226	9.0	15	SATL	15.0	8.8	5
		*1645	8	41.8	171	25.9	87.3	7.5	9	1.8	226	9.0	16	C/C			6
		*1822	8	53.79	171	27.80	99.4	7.9	8	1.6	238	9.0	16	SATL	8.2	4.5	8
		1845	8	56.8	171	28.3	102.4	7.9	11	1.6	238	9.0	18	C/C			9
		*2038	9	11.35	171	31.05	117.2	7.3	8	2.2	234	9.0	18	SATL	3.6	2.3	11
		*2210	9	22.49	171	32.65	128.5	7.4	7	2.2	237	9.0	18	SATL	3.4	1.5	13
		2240	9	26.2	171	33.1	132.2	7.2	17	2.2	237	9.0	26	C/C			14
		*2338	9	32.82	171	35.16	139.2	7.7	14	2.1	254	9.0	26	SATL	3.3	1.5	16
30	7	0 0	9	35.6	171	35.9	142.0	7.7	14	2.1	254	9.0	26				17
		* 120	9	46.56	171	38.45	152.3	7.9	15	1.9	257	9.0	26	SATL	3.7	1.7	19
		220	9	53.2	171	40.6	160.2	7.8	22	1.9	257	9.0	32	C/C			20
		* 740	10	31.66	171	56.29	201.7	8.5	26	1.1	270	9.0	32	SATL	12.2	6.3	22
		* 948	10	47.95	172	4.36	219.8	8.6	29	0.6	254	9.0	32	SATL	2.3	2.1	24
		1030	10	53.2	172	7.4	225.8	8.7	19	0.6	254	9.0	22	C/C			25
		*1240	11	10.91	172	7.4	244.5	8.4	18	0.9	246	9.0	22	SATL	1.7	2.9	27
		*1734	11	50.00	172	26.28	285.6	8.8	17	0.8	275	9.0	22	SATL	4.5	4.9	29
		18 0	11	53.6	172	27.4	289.4	8.8	14	0.8	275	9.0	19	C/C			30
		19 5	12	2.9	172	29.8	299.0	7.8	13	0.8	275	8.0	19	C/S			31
		*2110	12	18.84	172	33.58	315.3	6.8	15	1.3	222	8.0	19	SATL	3.0	3.6	33
		*2156	12	23.91	172	34.95	320.5	7.8	12	1.0	272	8.0	19	SATL	1.0	0.8	35
		2215	12	26.3	172	35.5	323.0	5.3	8	1.0	272	5.5	19	C/S			36
		2223	12	27.0	172	35.6	323.7	7.8	12	1.0	272	8.0	19	C/S			37
		23 0	12	27.0	172	36.6	328.5	8.8	13	1.0	272	9.0	19	C/S			38
		*2340	12	37.41	172	37.89	334.3	8.7	11	1.3	274	9.0	19	SATL	1.8	1.7	40
31	7	0 0	12	40.3	172	38.5	337.3	8.7	11	1.3	274	9.0	19				41
		* 012	12	41.99	172	38.79	339.0	9.0	15	0.6	284	9.0	19	SATL	0.7	0.5	43
		* 158	12	57.27	172	43.09	354.8	8.7	15	0.8	262	9.0	19	SATL	1.1	1.8	45
		* 640	13	36.74	172	53.58	395.6	8.8	15	0.6	271	9.0	19	SATL	3.7	4.7	47
		* 856	13	56.06	172	58.92	415.6	8.4	16	0.7	231	9.0	19	SATL	1.5	2.3	49
		* 940	14	1.98	173	0.72	421.8	8.5	16	0.7	242	9.0	19	SATL	0.6	0.7	51
		*1316	14	31.47	173	9.33	452.4	8.3	18	0.7	208	9.0	19	SATL	2.5	3.6	53
		*1820	15	11.43	173	22.93	494.5	8.6	18	0.5	215	9.0	19	SATL	3.6	5.1	55
		19 0	15	16.9	173	24.8	500.2	8.6	16	0.5	215	9.0	17	C/C			56
		2013	15	26.9	173	27.8	510.6	7.6	16	0.5	215	8.0	17	C/S			57
		2021	15	27.8	173	28.1	511.7	8.6	16	0.5	215	9.0	17	C/S			58
		*2044	15	31.00	173	29.00	514.9	9.0	15	0.3	283	9.0	17	SATL	1.1	2.4	60
		*21 4	15	33.90	173	29.80	517.9	8.7	13	0.7	262	9.0	17	SATL	0.2	0.3	62
		*2232	15	46.39	173	32.82	530.8	8.8	13	0.7	268	9.0	17	SATL	1.0	1.5	64
		*2252	15	49.25	173	33.50	533.7	8.7	15	0.5	252	9.0	17	SATL	0.3	0.3	66
		*2312	15	52.07	173	34.26	536.6	9.1	13	0.7	290	9.0	17	SATL	0.2	0.3	68
1	8	0 0	15	59.1	173	35.9	543.9	9.1	13	0.7	290	9.0	17				69
		12 0	17	45.1	174	1.1	652.6	9.0	16	0.7	290	9.0	20	C/C			70
		18 5	18	38.0	174	16.8	707.5	8.3	15	0.7	290	8.3	20	C/S			71
		*1930	18	49.35	174	20.16	719.3	8.5	17	0.5	318	8.3	20	SATL	13.4	20.3	73
		*1956	18	52.87	174	21.32	723.0	8.3	19	0.2	292	8.3	20	SATL	0.2	0.4	75
		*2116	19	3.37	174	25.07	734.0	8.5	19	0.3	341	8.3	20	SATL	0.3	1.3	77
		*2140	19	6.59	174	26.23	737.4	8.4	19	0.2	307	8.3	20	SATL	0.2	0.4	79
2	8	0 0	19	25.1	174	32.8	757.0	8.4	19	0.2	307	8.3	20				80
		* 132	19	37.26	174	37.15	769.8	8.3	16	0.5	285	8.3	20	SATL	0.9	3.9	82
		* 634	20	17.23	174	49.57	811.4	8.1	17	0.5	264	8.3	20	SATL	2.8	5.0	84
		* 722	20	23.43	174	51.58	817.9	8.1	16	0.7	274	8.3	20	SATL	0.4	0.8	86
		* 9 4	20	36.77	174	55.54	831.8	7.8	18	0.6	234	8.3	20	SATL	1.2	1.7	88
		* 930	20	40.00	174	56.63	835.1	8.1	19	0.2	220	8.3	20	SATL	0.3	0.4	90
		*1246	21	4.92	175	6.05	861.6	8.1	17	0.4	258	8.3	20	SATL	0.8	3.3	92
		1346	21	12.6	175	8.6	869.7	8.7	288	0.4	258	8.3	289	C/C			93
		1645	21	20.4	174	42.2	895.5	5.4	287	0.4	258	5.0	289	C/S			94
		*17 8	21	21.01	174	40.07	897.6	5.0	289	0.0	270	5.0	289	S463	1.9	4.4	96
		17 8	21	21.0	174	40.1	897.6	0.0	270	0.0	270	0.0	500	STOP			97
Site 463																	
10	8	*1616	21	21.01	174	39.70	897.9	0.9	245	0.9	245	0.0	500	DEP	0.4	191.1	99
		1616	21	21.0	174	39.7	897.9	5.9	188	0.9	245	5.5	180	U/W			100
		1618	21	20.8	174	39.7	898.1	6.4	245	0.9	245	5.5	245	C/C			101
		1621	21	20.7	174	39.4	898.4	8.9	245	0.9	245	8.0	245	C/S			102
		1719	21	17.0	174	31.0	907.0	7.7	138	0.9	245	8.0	132	C/C			103
		18 6	21	12.6	174	35.3	913.1	7.4	15	0.9	245	8.0	20	C/C			104
		*1856	21	18.51	174	37.01	919.2	7.0	12	1.5	241	8.0	20	SATL	2.4	2.7	106
		1857	21	18.6	174	37.0	919.3	4.5	8	1.5	241	5.5	20	C/S			107
		19 2	21	19.0	174	37.1	919.7	7.0	12	1.5	241	8.0	20	C/S			108
		1918	21	20.8	174	37.5	921.6	4.5	8	1.5	241	5.5	20	C/S			109
		1925	21	21.3	174	37.6	922.1	7.0	12	1.5	241	8.0	20	C/S			110

Table 1. (Continued).

			Latitude		Longitude				Actual Drift			Dr.			Drift		
Day	Mo.	Time	Deg.	Min.	Deg.	Min.	Dist.	Speed	Cse.	Speed	Hed.	Speed	Cse.	Cmnt.	Dist.	Time	No.
Site 463																	
10	8	*1944	21	23.48	174	38.08	924.3	6.7	18	1.3	212	8.0	20	SATL	1.2	0.8	112
		*2040	21	29.45	174	40.13	930.6	6.7	13	1.6	229	8.0	20	SATL	1.3	0.9	114
		2049	21	30.4	174	40.4	931.6	8.0	357	1.6	229	9.0	5	C/CS			115
		*2130	21	35.86	174	40.09	937.0	8.2	357	1.4	239	9.0	5	SATL	1.3	0.8	117
		*2232	21	44.37	174	39.59	945.5	8.0	358	1.4	230	9.0	5	SATL	1.5	1.0	119
11	8	0 0	21	56.2	174	39.1	957.3	8.0	358	1.4	230	9.0	5				120
		012	21	57.8	174	39.0	958.9	4.6	352	1.4	230	5.5	5	C/S			121
		018	21	58.2	174	39.0	959.4	8.0	358	1.4	230	9.0	5	C/S			122
		* 522	22	38.93	174	37.24	1000.1	8.1	357	1.5	234	9.0	5	SATL	9.9	6.8	124
		* 640	22	49.42	174	36.64	1010.6	8.5	359	1.1	244	9.0	5	SATL	2.0	1.3	126
		* 7 8	22	53.39	174	36.55	1014.6	8.5	1	0.8	233	9.0	5	SATL	0.5	0.5	128
		* 826	23	4.41	174	36.76	1025.6	8.2	2	0.9	210	9.0	5	SATL	1.1	1.3	130
		*1320	23	44.56	174	38.55	1065.8	8.6	2	0.7	234	9.0	5	SATL	4.4	4.9	132
		*17 8	24	17.17	174	39.59	1098.4	8.7	0	0.8	252	9.0	5	SATL	2.5	3.8	134
		1745	24	22.6	174	39.6	1103.8	8.8	353	0.8	252	9.0	358	C/C			135
		2153	24	58.8	174	34.9	1140.3	8.3	48	0.8	252	9.0	50	C/C			136
		2216	25	0.9	174	37.5	1143.5	8.8	355	0.8	252	9.0	0	C/C			137
		*2312	25	9.06	174	36.76	1151.7	9.1	357	0.4	283	9.0	0	SATL	4.7	6.1	139
12	8	0 0	25	16.3	174	36.4	1159.0	9.1	357	0.4	283	9.0	0				140
		* 056	25	24.83	174	35.93	1167.4	9.5	359	0.5	345	9.0	0	SATL	0.8	1.7	142
		* 922	26	45.17	174	34.56	1247.8	9.4	356	0.8	297	9.0	0	SATL	4.7	8.4	144
		10 0	26	51.1	174	34.1	1253.7	9.4	352	0.8	297	9.0	356	C/C			145
		*1020	26	54.21	174	33.56	1256.9	9.1	351	0.8	273	9.0	356	SATL	0.8	1.0	147
		*12 8	27	10.45	174	30.67	1273.3	8.7	351	0.8	243	9.0	356	SATL	1.5	1.8	149
		*1854	28	8.75	174	20.40	1332.3	8.6	354	0.5	214	9.0	356	SATL	5.5	6.8	151
		1930	28	13.9	174	19.8	1337.5	8.6	356	0.5	214	9.0	358	C/C			152
		*2038	28	23.67	174	19.07	1347.5	8.5	1	0.7	133	9.0	358	SATL	0.8	1.7	154
		*2136	28	31.90	174	19.30	1355.5	9.3	0	0.5	52	9.0	358	SATL	0.7	1.0	156
		2137	28	32.1	174	19.3	1355.7	5.8	2	0.5	52	5.5	358	C/S			157
		*2156	28	33.89	174	19.37	1357.5	5.2	356	0.4	214	5.5	358	SATL	0.2	0.3	159
		2156	28	33.9	174	19.4	1357.5	8.7	357	0.4	214	9.0	358	C/S			160
		23 0	28	43.2	174	18.7	1366.8	8.7	350	0.4	214	9.0	352	C/C			161
13	8	0 0	28	51.8	174	17.1	1375.5	8.7	350	0.4	214	9.0	352				162
		* 138	29	5.79	174	14.32	1389.8	8.8	357	0.7	100	9.0	352	SATL	1.5	3.7	164
		* 514	29	37.43	174	12.11	1421.5	8.8	357	0.8	102	9.0	352	SATL	2.7	3.6	166
		6 0	29	44.1	174	11.7	1428.2	8.8	358	0.8	102	9.0	353	C/C			167
		* 644	29	50.56	174	11.41	1434.6	8.6	357	0.7	115	9.0	353	SATL	1.2	1.5	169
		* 7 4	29	53.44	174	11.24	1437.5	8.3	358	1.0	128	9.0	353	SATL	0.3	0.3	171
		* 742	29	58.71	174	11.00	1442.8	8.1	355	0.9	156	9.0	353	SATL	0.7	0.6	173
		* 8 2	30	1.42	174	10.72	1445.5	8.3	353	0.7	175	9.0	353	SATL	0.3	0.3	175
		* 928	30	13.21	174	9.01	1457.4	8.3	354	0.7	164	9.0	353	SATL	1.1	1.4	177
		* 948	30	15.97	174	8.66	1460.1	8.3	354	0.7	166	9.0	353	SATL	0.3	0.3	179
		*11 2	30	26.13	174	7.34	1470.4	8.6	354	0.4	155	9.0	353	SATL	0.9	1.2	181
		1210	30	35.9	174	6.1	1480.2	8.6	357	0.4	155	9.0	356	C/C			182
		*1244	30	40.74	174	5.80	1485.0	9.2	354	0.3	302	9.0	356	SATL	0.7	1.7	184
		*17 6	31	20.73	174	1.15	1525.2	9.5	357	0.5	18	9.0	356	SATL	1.5	4.4	186
		1730	31	24.5	174	0.9	1529.0	9.5	359	0.5	18	9.0	358	C/C			187
		*18 2	31	29.58	174	0.83	1534.1	9.3	358	0.3	345	9.0	358	SATL	0.5	0.9	189
		*2050	31	55.55	173	59.55	1560.1	9.2	358	0.2	8	9.0	358	SATL	0.9	2.8	191
14	8	0 0	32	24.5	173	58.5	1589.1	9.2	358	0.2	8	9.0	358				192
		010	32	26.1	173	58.4	1590.6	8.7	358	0.2	8	8.5	358	C/S			193
		* 028	32	28.65	173	58.30	1593.2	8.1	359	0.4	152	8.5	358	SATL	0.6	3.6	195
		* 420	33	0.12	173	57.82	1623.7	8.7	4	0.9	78	8.5	358	SATL	1.6	3.9	197
		457	33	5.5	173	58.2	1630.0	9.2	3	0.9	78	9.0	358	C/S			198
		* 556	33	14.50	173	58.86	1639.1	9.0	3	0.8	92	9.0	358	SATL	1.4	1.6	200
		650	33	22.6	173	59.4	1647.2	9.0	1	0.8	92	9.0	356	C/C			201
		* 656	33	23.47	173	59.44	1648.1	8.5	1	0.9	121	9.0	356	SATL	0.9	1.0	203
		*1322	34	18.27	174	0.40	1702.9	7.3	358	1.7	167	9.0	356	SATL	5.7	6.4	205
		1350	34	21.7	174	0.2	1706.3	7.3	351	1.7	167	9.0	350	C/C			206
		*1614	34	39.03	173	56.76	1723.9	6.7	343	2.5	190	9.0	350	SATL	4.9	2.9	208
		*1856	34	56.36	173	50.18	1742.0	6.3	346	2.7	179	9.0	350	SATL	6.8	2.7	210
		*2040	35	6.96	173	46.95	1752.9	6.7	344	2.5	187	9.0	350	SATL	4.8	1.7	212
		*22 2	35	15.72	173	43.86	1762.1	6.6	344	2.5	186	9.0	350	SATL	3.4	1.4	214
		*2322	35	24.21	173	40.89	1770.9	6.5	345	2.6	183	9.0	350	SATL	3.4	1.3	216
		2330	35	25.1	173	40.6	1771.8	5.5	344	2.6	183	8.0	350	C/S			217
15	8	0 0	35	27.7	173	39.7	1774.5	5.5	344	2.6	183	8.0	350				218
		0 5	35	28.2	173	39.5	1775.0	5.5	351	2.6	183	8.0	355	C/C			219
		* 110	35	34.02	173	38.39	1780.9	6.0	355	2.0	174	8.0	355	SATL	4.7	1.8	221
		* 510	35	58.09	173	35.98	1805.1	6.2	359	1.8	161	8.0	355	SATL	7.9	4.0	223
		* 648	36	8.29	173	35.76	1815.3	6.4	1	1.8	152	8.0	355	SATL	3.0	1.6	225
		718	36	11.5	173	35.9	1818.5	7.4	1	1.8	152	9.0	355	C/S			226
		* 754	36	15.89	173	35.92	1822.9	7.2	13	3.0	129	9.0	355	SATL	2.0	1.1	228

Table 1. (Continued).

			Latitude		Longitude				Actual Drift				Dr.			Drift		
Day	Mo.	Time	Deg.	Min.	Deg.	Min.	Dist.	Speed	Cse.	Speed	Hed.	Speed	Cse.	Cmnt.	Dist.	Time	No.
Site 463																	
15	8	820	36	19.0	173	36.8	1826.0	6.8	14	3.0	129	8.5	355	C/S			229
		* 836	36	20.71	173	37.30	1827.8	7.3	5	1.8	132	8.5	355	SATL	2.2	0.7	231
		* 942	36	28.68	173	38.16	1835.8	7.5	355	1.0	174	8.5	355	SATL	2.1	1.1	233
		10 0	36	30.9	173	37.9	1838.1	7.0	355	1.0	174	8.0	355	C/S			234
		11 0	36	37.9	173	37.2	1845.1	7.0	350	1.0	174	8.0	350	C/C			235
		*1216	36	46.71	173	35.16	1854.0	7.3	344	1.0	214	8.0	350	SATL	2.5	2.6	237
		1230	36	48.4	173	34.6	1855.7	7.8	345	1.0	214	8.5	350	C/S			238
		14 0	36	59.7	173	30.8	1867.5	7.7	356	1.0	214	8.5	0	C/C			239
		*17 6	37	23.42	173	28.54	1891.3	8.4	1	0.2	144	8.5	0	SATL	4.9	4.8	241
		18 0	37	31.0	173	28.6	1898.8	8.9	1	0.2	144	9.0	0	C/S			242
		*18 2	37	31.25	173	28.65	1899.1	8.8	351	1.5	258	9.0	0	SATL	0.2	0.9	244
		*1852	37	38.50	173	27.12	1906.5	9.5	356	0.8	309	9.0	0	SATL	1.3	0.8	246
		*1950	37	47.68	173	26.38	1915.7	9.7	360	0.7	358	9.0	0	SATL	0.8	1.0	248
		*2054	37	58.06	173	26.35	1926.0	9.4	359	0.4	343	9.0	0	SATL	0.8	1.1	250
		2130	38	3.7	173	26.3	1931.7	9.4	354	0.4	343	9.0	355	C/C	0.8	1.1	251
		*2220	38	11.53	173	25.29	1939.5	10.2	360	1.5	31	9.0	355	SATL	0.7	1.4	253
16	8	0 0	38	28.5	173	25.2	1956.6	10.2	360	1.5	31	9.0	355				254
		* 0 4	38	29.22	173	25.22	1957.2	9.8	1	1.3	52	9.0	355	SATL	2.6	1.7	256
		030	38	33.4	173	25.3	1961.5	9.5	349	1.3	52	9.0	342	C/C			257
		318	38	59.6	173	19.0	1988.1	10.2	32	1.3	52	9.0	29	C/C			258
		* 412	39	7.42	173	25.22	1997.3	9.1	22	1.1	302	9.0	29	SATL	5.4	4.1	260
		* 7 6	39	32.0	173	37.95	2023.8	10.5	31	1.6	41	9.0	29	SATL	3.4	2.9	262
		825	39	43.9	173	47.2	2037.6	7.1	32	1.6	41	5.5	29	C/S			263
		* 942	39	51.64	173	53.33	2046.7	5.5	29	0.0	0	5.5	29	S464	4.1	2.6	265
		942	39	51.6	173	53.3	2046.7	0.0	0	0.0	0	0.0	500	STOP			266
Site 464																	
21	8	*1120	39	51.64	173	53.33	2046.7	1.4	136	1.4	136	0.0	500	DEP	0.1	121.6	268
		1120	39	51.6	173	53.3	2046.7	4.2	301	1.4	136	5.5	305	U/W			269
		1125	39	51.8	173	52.9	2047.0	5.7	302	1.4	136	7.0	305	C/S			270
		*1234	39	55.32	173	45.76	2053.6	6.7	320	1.8	52	7.0	305	SATL	1.7	1.2	272
		1258	39	57.4	173	43.5	2056.2	7.1	130	1.8	52	7.0	144	C/C			273
		1417	39	51.4	173	52.9	2065.7	9.1	133	1.8	52	9.0	144	C/S			274
		1457	39	47.2	173	58.7	2071.7	9.0	136	1.8	52	9.0	147	C/C			275
		*1654	39	34.68	174	14.64	2089.3	9.0	148	0.1	209	9.0	147	SATL	7.7	4.3	277
		*1812	39	24.76	174	22.82	2101.0	9.1	147	0.1	180	9.0	147	SATL	0.2	1.3	279
		*1838	39	21.45	174	25.57	2104.9	9.5	148	0.6	163	9.0	147	SATL	0.1	0.4	281
		1842	39	20.9	174	26.0	2105.6	8.0	148	0.6	163	7.5	147	C/S			282
		*1936	39	14.76	174	30.95	2112.8	7.5	149	0.3	238	7.5	147	SATL	0.6	1.0	284
		*2238	38	55.21	174	45.93	2135.6	7.3	139	1.1	40	7.5	147	SATL	0.9	3.0	286
		2315	38	51.8	174	49.7	2140.1	8.7	140	1.1	40	9.0	147	C/S			287
22	8	0 0	38	46.8	174	55.1	2146.6	8.7	140	1.1	40	9.0	147				288
		* 022	38	44.31	174	57.70	2149.8	8.2	143	1.0	2	9.0	147	SATL	1.9	1.7	290
		* 4 0	38	20.53	175	20.67	2179.6	8.3	148	0.7	318	9.0	147	SATL	3.7	3.6	292
		558	38	6.7	175	31.7	2195.9	7.8	148	0.7	318	8.5	147	C/S			293
		613	38	5.1	175	33.0	2197.9	8.3	148	0.7	318	9.0	147	C/S			294
		* 758	37	52.82	175	42.85	2212.4	8.6	143	0.7	25	9.0	147	SATL	2.9	4.0	296
		918	37	43.6	175	51.7	2223.9	4.2	138	0.7	25	4.5	147	C/S			297
		* 924	37	43.34	175	52.0	2224.3	3.8	152	0.7	301	4.5	147	SATL	1.1	1.4	299
		946	37	42.1	175	52.8	2225.7	8.3	149	0.7	301	9.0	147	C/S			300
		11 0	37	33.3	175	59.6	2236.0	8.3	132	0.7	301	9.0	131	C/C			301
		*1126	37	30.86	176	2.84	2239.6	8.3	134	0.8	276	9.0	131	SATL	1.6	2.0	303
		1410	37	15.0	176	23.3	2262.3	7.3	135	0.8	276	8.0	131	C/S			304
		*1558	37	5.70	176	35.11	2275.5	6.8	139	1.5	275	8.0	131	SATL	3.8	4.5	306
		*1772	36	58.55	176	43.02	2285.1	7.2	145	2.0	252	8.0	131	SATL	2.2	1.4	308
		*1740	36	56.79	176	44.57	2287.2	6.6	142	1.9	271	8.0	131	SATL	0.7	0.3	310
		1740	36	56.8	176	44.6	2287.2	6.6	138	1.9	271	8.0	128	C/C			311
		*1850	36	51.07	176	50.94	2294.9	7.7	136	1.1	240	8.0	128	SATL	2.3	1.2	313
		1853	36	50.8	176	51.3	2295.2	8.1	160	1.1	240	8.0	152	C/C			314
		*1910	36	48.64	176	52.26	2297.5	7.1	163	1.7	280	8.0	152	SATL	0.4	0.3	316
		1925	36	46.9	176	52.9	2299.3	6.1	165	1.7	280	7.0	152	C/S			317
		1930	36	46.5	176	53.1	2299.8	6.0	160	1.7	280	7.0	148	C/C			318
		*2034	36	40.45	176	55.77	2306.2	6.0	154	1.2	297	7.0	148	SATL	2.4	1.4	320
		*2132	36	35.22	176	58.99	2312.0	6.2	144	1.0	358	7.0	148	SATL	1.2	1.0	322
		2215	36	31.7	177	2.3	2316.5	8.2	142	1.0	358	9.0	146	C/CS			323
23	8	0 0	36	20.3	177	13.1	2330.8	8.2	142	1.0	358	9.0	146				324
		2 4	36	6.8	177	25.9	2347.8	4.7	140	1.0	358	5.5	146	C/S			325
		226	36	5.5	177	27.3	2349.5	8.2	142	1.0	358	9.0	146	C/S			326
		* 452	35	49.70	177	42.31	2369.4	8.5	137	1.5	33	9.0	146	SATL	7.1	7.3	328
		5 9	35	47.9	177	44.3	2371.8	5.1	130	1.5	33	5.5	146	C/S			329
		513	35	47.7	177	44.7	2372.2	8.5	137	1.5	33	9.0	146	C/S			330
		540	35	44.9	177	47.9	2376.0	8.4	143	1.5	33	9.0	152	C/C			331

Table 1. (Continued).

			Latitude		Longitude		Actual Drift					Dr.			Drift		
Day	Mo.	Time	Deg.	Min.	Deg.	Min.	Dist.	Speed	Cse.	Speed	Hed.	Speed	Cse.	Cmnt.	Dist.	Time	No.
Site 464																	
23	8	* 638	35	38.44	177	53.91	2384.1	9.1	143	1.5	61	9.0	152	SATL	2.7	1.8	333
		* 658	35	36.03	177	56.17	2387.2	9.0	148	0.6	62	9.0	152	SATL	0.5	0.3	335
		710	35	34.5	177	57.3	2389.0	9.0	152	0.6	62	9.0	156	C/C			336
		*12 6	34	55.36	178	22.74	2433.3	8.8	149	1.1	54	9.0	156	SATL	3.2	5.1	338
		1236	34	51.6	178	25.5	2437.7	8.7	156	1.1	54	9.0	163	C/C			339
		*1648	34	18.17	178	43.48	2474.2	8.9	159	0.6	59	9.0	163	SATL	5.2	4.7	341
		1650	34	17.9	178	43.6	2474.5	8.8	162	0.6	59	9.0	166	C/C			342
		*18 0	34	8.05	178	47.38	2484.8	8.7	162	0.7	51	9.0	166	SATL	0.7	1.2	344
		*1818	34	5.56	178	48.36	2487.4	10.0	161	1.3	121	9.0	166	SATL	0.3	0.3	346
		1859	33	59.1	178	51.1	2494.3	6.0	157	1.3	121	5.0	166	C/S			347
		*1946	33	54.80	178	53.31	2499.0	5.9	165	0.9	158	5.0	166	SATL	2.0	1.5	349
		*2045	33	49.23	178	55.13	2504.7	5.0	166	0.0	90	5.0	166	S465	0.9	1.0	351
		2045	33	49.2	178	55.1	2504.7	0.0	90	0.0	90	0.0	500	S465			
Site 465																	
28	8	* 536	33	49.23	178	55.41	2505.0	1.9	200	1.9	200	0.0	500	DEP	0.3	104.8	354
		536	33	49.2	178	55.4	2505.0	3.1	12	1.9	200	5.0	15	U/W			355
		545	33	49.7	178	55.5	2505.4	7.1	14	1.9	200	9.0	15	C/S			356
		* 816	34	6.95	179	0.62	2523.2	7.9	15	1.1	192	9.0	15	SATL	5.2	2.7	358
		944	34	18.1	179	4.3	2534.7	9.5	131	1.1	192	9.0	125	C/C			359
		1054	34	10.7	179	14.4	2545.8	5.6	136	1.1	192	5.0	125	C/S			360
		1130	34	8.3	179	17.2	2549.2	7.6	297	1.1	192	8.0	305	C/CS			361
		1133	34	8.5	179	16.8	2549.5	7.4	308	1.1	192	8.0	315	C/C			362
		1143	34	9.3	179	15.6	2550.8	7.1	329	1.1	192	8.0	335	C/C			363
		*1148	34	9.77	179	15.26	2551.4	7.1	332	1.0	180	8.0	335	SATL	4.1	3.5	365
		12 0	34	11.0	179	14.4	2552.8	7.1	23	1.0	180	8.0	20	C/C			366
		1216	34	12.7	179	15.3	2554.7	9.0	198	1.0	180	8.0	200	C/C			367
		1254	34	7.3	179	13.2	2560.3	7.1	23	1.0	180	8.0	20	C/C			368
		*1332	34	11.46	179	15.34	2564.8	8.0	20	0.0	90	8.0	20	S466	1.8	1.7	370
		1332	34	11.5	179	15.3	2564.8	0.0	90	0.0	90	0.0	500	STOP			371
Site 466																	
31	8	* 048	34	11.46	179	16.50	2565.8	0.6	127	0.6	127	0.0	500	DEP	1.0	59.3	373
		048	34	11.5	179	16.5	2565.8	9.4	177	0.6	127	9.0	180	U/W			374
		158	34	0.6	179	17.2	2576.7	9.6	120	0.6	127	9.0	120	C/C			375
		327	33	53.4	179	31.9	2590.9	9.6	126	0.6	127	9.0	126	C/C			376
		* 528	33	41.98	179	50.73	2610.2	10.0	128	1.0	142	9.0	126	SATL	2.8	4.7	378
		* 714	33	31.25	179	52.55	2627.8	10.4	122	1.5	101	9.0	126	SATL	1.8	1.8	380
		* 918	33	19.72	179	30.76	2649.3	9.6	122	0.9	74	9.0	126	SATL	3.2	2.1	382
		*1630	32	43.34	178	20.97	2718.2	8.6	124	0.5	343	9.0	126	SATL	6.4	7.2	384
		1810	32	35.4	178	6.9	2732.5	8.6	128	0.5	343	9.0	130	C/C			385
		*1834	32	33.27	178	3.68	2736.0	9.1	128	0.3	59	9.0	130	SATL	1.2	2.1	387
		*2030	32	22.43	177	47.20	2753.6	8.9	130	0.1	286	9.0	130	SATL	0.7	1.9	389
1	9	0 0	32	2.3	177	19.1	2784.8	8.9	130	0.1	286	9.0	130				390
		* 340	31	41.16	176	49.69	2817.5	8.8	131	0.2	284	9.0	130	SATL	0.7	7.2	392
		* 440	31	35.43	176	41.85	2826.5	8.8	130	0.2	310	9.0	130	SATL	0.3	1.0	394
		* 528	31	30.92	176	35.54	2833.3	8.9	130	0.1	344	9.0	130	SATL	0.2	0.8	396
		540	31	29.8	176	33.9	2835.1	8.9	122	0.1	344	9.0	122	C/C			397
		* 622	31	26.50	176	27.68	2841.3	9.0	121	0.2	27	9.0	122	SATL	0.1	0.9	399
		7 0	31	23.6	176	22.0	2847.0	9.0	120	0.2	27	9.0	121	C/C			400
		* 824	31	17.28	176	9.20	2859.6	9.3	119	0.4	74	9.0	121	SATL	0.4	2.0	402
		* 9 6	31	14.12	176	2.53	2866.1	9.2	119	0.5	62	9.0	121	SATL	0.4	0.7	404
		*1050	31	6.45	175	46.09	2882.1	8.8	119	0.4	357	9.0	121	SATL	0.8	1.7	406
		1130	31	3.6	175	40.1	2888.0	8.8	122	0.4	357	9.0	124	C/C			407
		*1536	30	44.40	175	4.53	2924.1	8.5	125	0.6	285	9.0	124	SATL	1.7	4.8	409
		*1772	30	35.77	174	50.32	2939.0	8.7	126	0.4	270	9.0	124	SATL	1.0	1.8	411
		*18 0	30	32.58	174	45.14	2944.5	9.3	127	0.6	186	9.0	124	SATL	0.3	0.6	413
		1819	30	30.8	174	42.4	2947.4	6.3	129	0.6	186	6.0	124	C/S			414
		1840	30	29.4	174	40.4	2949.7	9.3	127	0.6	186	9.0	124	C/S			415
		*1944	30	23.43	174	31.28	2959.6	8.8	127	0.5	239	9.0	124	SATL	1.1	1.7	417
		*2050	30	17.61	174	22.30	2969.2	8.8	128	0.7	233	9.0	124	SATL	0.6	1.1	419
		2211	30	10.2	174	11.5	2981.1	4.3	133	0.7	233	4.5	124	C/S			420
		*2234	30	9.10	174	10.15	2982.8	3.9	118	0.7	335	4.5	124	SATL	1.3	1.7	422
		2235	30	9.1	174	10.1	2982.8	8.4	121	0.7	335	9.0	124	C/S			423
2	9	0 0	30	2.9	173	58.4	2994.7	8.4	121	0.7	335	9.0	124				424
		* 246	29	50.82	173	35.59	3017.8	8.4	118	1.1	359	9.0	124	SATL	3.2	4.2	426
		310	29	49.3	173	32.2	3021.2	8.4	120	1.1	359	9.0	126	C/C			427
		4 0	29	45.8	173	25.2	3028.2	8.4	116	1.1	359	9.0	122	C/C			428
		* 432	29	43.81	173	20.52	3032.7	8.7	121	0.3	332	9.0	122	SATL	2.0	1.8	430
		*1438	28	58.51	171	53.82	3120.8	8.6	126	0.7	246	9.0	122	SATL	3.3	10.1	432
		*1622	28	49.74	171	39.99	3135.7	8.4	127	0.9	251	9.0	122	SATL	1.3	1.7	434
		*1646	28	47.71	171	36.90	3139.1	8.5	126	0.8	252	9.0	122	SATL	0.4	0.4	436

Table 1. (Continued).

			Latitude		Longitude		Actual Drift					Dr.			Drift		
Day	Mo.	Time	Deg.	Min.	Deg.	Min.	Dist.	Speed	Cse.	Speed	Hed.	Speed	Cse.	Cmnt.	Dist.	Time	No.
Site 466																	
2	9	17 0	28	46.5	171	35.1	3141.1	8.5	124	0.8	252	9.0	120	C/C			437
		*1834	28	39.09	171	22.53	3154.4	8.4	122	0.7	279	9.0	120	SATL	1.5	1.8	439
3	9	0 0	28	15.2	170	38.4	3199.9	8.4	122	0.7	279	9.0	120				440
		* 154	28	6.89	170	23.07	3215.8	8.1	122	0.9	285	9.0	120	SATL	5.0	7.3	442
		* 456	27	53.96	169	59.31	3240.5	8.2	121	0.9	288	9.0	120	SATL	2.8	3.0	444
		* 644	27	46.34	169	45.12	3255.1	8.2	122	0.9	276	9.0	120	SATL	1.6	1.8	446
		* 840	27	37.83	169	30.01	3271.0	8.1	119	0.9	308	9.0	120	SATL	1.8	1.9	448
		*1024	27	31.02	169	16.18	3285.0	7.9	116	1.2	325	9.0	120	SATL	1.6	1.7	450
		*1556	27	11.74	168	31.98	3328.8	8.1	120	0.9	296	9.0	120	SATL	6.9	5.5	452
		*1742	27	4.53	168	18.20	3343.0	8.7	122	0.4	266	9.0	120	SATL	1.7	1.8	454
		*2020	26	52.60	167	56.38	3365.8	9.0	126	0.9	211	9.0	120	SATL	1.1	2.6	456
		*22 6	26	43.28	167	41.89	3381.7	9.1	123	0.4	199	9.0	120	SATL	1.7	1.8	458
4	9	0 0	26	34.0	167	25.6	3399.0	9.1	123	0.4	199	9.0	120				459
		* 244	26	20.60	167	2.22	3423.9	7.9	122	1.1	290	9.0	120	SATL	2.0	4.6	461
		3 9	26	18.9	166	59.1	3427.1	7.9	118	1.1	290	9.0	117	C/C			462
		425	26	14.2	166	49.3	3437.1	8.1	118	1.1	290	9.2	117	C/S			463
		* 430	26	13.87	166	48.61	3437.8	8.4	116	0.8	305	9.2	117	SATL	2.1	1.8	465
		* 532	26	10.03	166	39.92	3446.5	8.5	117	0.7	298	9.2	117	SATL	0.9	1.0	467
		* 750	26	1.22	166	20.58	3466.0	8.7	113	0.8	345	9.2	117	SATL	1.7	2.3	469
		*1434	25	38.24	165	20.82	3524.5	9.0	117	0.2	292	9.2	117	SATL	5.4	6.7	471
		*15 6	25	36.06	165	16.10	3529.2	8.8	120	0.6	242	9.2	117	SATL	0.2	0.5	473
		1553	25	32.6	165	9.5	3536.2	8.9	127	0.6	242	9.2	123	C/C			474
		*1618	25	30.34	165	6.17	3539.9	8.6	126	0.8	266	9.2	123	SATL	0.8	1.2	476
		*1650	25	27.64	165	2.09	3544.4	8.1	127	1.2	276	9.2	123	SATL	0.5	0.5	478
		*1714	25	25.69	164	59.21	3547.7	8.5	126	0.8	270	9.2	123	SATL	0.5	0.4	480
		1811	25	20.9	164	51.9	3555.8	7.8	126	0.8	270	8.5	123	C/S			481
		1812	25	20.9	164	51.8	3555.9	3.8	130	0.8	270	4.5	123	C/S			482
		1820	25	20.5	164	51.4	3556.4	8.3	126	0.8	270	9.0	123	C/S			483
		1839	25	19.0	164	49.0	3559.1	8.5	126	0.8	270	9.2	123	C/S			484
5	9	0 0	24	52.2	164	8.3	3604.7	8.5	126	0.8	270	9.2	123				485
		* 334	24	34.32	163	41.16	3635.1	8.1	125	1.2	287	9.2	123	SATL	8.5	10.3	487
		415	24	31.1	163	36.2	3640.6	8.0	122	1.2	287	9.2	120	C/C			488
		* 5 2	24	27.81	163	30.33	3646.9	8.2	124	1.2	274	9.2	120	SATL	1.8	1.5	490
		* 650	24	19.68	163	16.89	3661.6	8.7	124	0.7	255	9.2	120	SATL	2.2	1.8	492
		725	24	16.9	163	12.3	3666.7	8.7	121	0.7	255	9.2	118	C/C			493
		* 956	24	5.52	162	51.84	3688.5	8.8	119	0.5	271	9.2	118	SATL	2.4	3.1	495
		*1340	23	49.42	162	20.65	3721.2	9.8	116	0.7	83	9.2	118	SATL	1.9	3.7	497
		*1524	23	42.09	162	3.89	3738.2	9.9	115	0.9	80	9.2	118	SATL	1.3	1.7	499
		*16 2	23	39.45	161	57.65	3744.5	9.1	116	0.4	17	9.2	118	SATL	0.6	0.6	501
		*1748	23	32.43	161	41.78	3760.7	8.8	115	0.6	350	9.2	118	SATL	0.7	0.6	503
		*1810	23	31.08	161	38.58	3763.9	8.3	113	1.1	334	9.2	118	SATL	0.3	0.4	505
		*1952	23	25.46	161	24.44	3778.0	8.9	112	1.0	11	9.2	118	SATL	2.0	1.7	507
		*2138	23	19.59	161	8.45	3793.9	8.4	115	0.9	327	9.2	118	SATL	1.8	1.8	509
		23 0	23	14.7	160	57.1	3805.4	8.3	124	0.9	327	9.2	126	C/C			510
6	9	0 0	23	10.1	160	49.5	3813.7	8.3	124	0.9	327	9.2	126				511
		016	23	8.9	160	47.5	3815.9	7.6	123	0.9	327	8.5	126	C/S			512
		027	23	8.1	160	46.3	3817.3	8.3	124	0.9	327	9.2	126	C/S			513
		146	23	2.0	160	36.3	3828.3	8.3	124	0.9	327	9.2	126	C/C			514
		* 348	22	52.60	160	20.98	3845.3	8.6	125	0.6	316	9.2	126	SATL	5.7	6.2	516
		* 414	22	50.44	160	17.67	3849.0	8.2	131	1.3	271	9.2	126	SATL	0.3	0.4	518
		440	22	48.1	160	14.8	3852.6	8.1	123	1.3	271	9.2	119	C/C			519
		* 534	22	44.10	160	8.15	3859.9	8.5	127	1.4	243	9.2	119	SATL	1.7	1.3	521
		* 6 2	22	41.71	160	4.72	3863.8	8.6	122	0.8	261	9.2	119	SATL	0.7	0.5	523
		610	22	41,1	160	3.7	3865.0	8.5	120	0.8	261	9.2	117	C/C			524
		734	22	35.1	159	52.5	3876.9	8.5	113	0.8	261	9.2	110	C/C			525
		* 8 8	22	33.25	159	47.74	3881.7	8.5	113	0.0	0	9.2	110	RADR	1.8	2.0	526
Honolulu, Hawaii																	

tion. Magnetic anomalies up to 700 gamms in amplitude are associated with the Marshall Island pedestal.

Central Basin

The ship's track obliquely crosses the western edge of the Central Basin, between the Line Islands and Marshall Islands (Figs. 2 and 9, mile 120–600). After mile 120, the track traverses an archipelagic apron of the Marshall Islands. The archipelagic apron sediments are at least 0.75-sec thick and are characterized by closely spaced internal reflectors. In most parts of the western Central Basin, as much as 0.5 sec of acoustically reflective sediments overlies an acoustic basement. Small-scale features, about 0.05 sec in relief, typify the sea floor in this region.

North of the hummocky topography near mile 210, the sea floor slopes gently downward to the deepest part of the basin, 7.6 sec deep near mile 400, and then up-

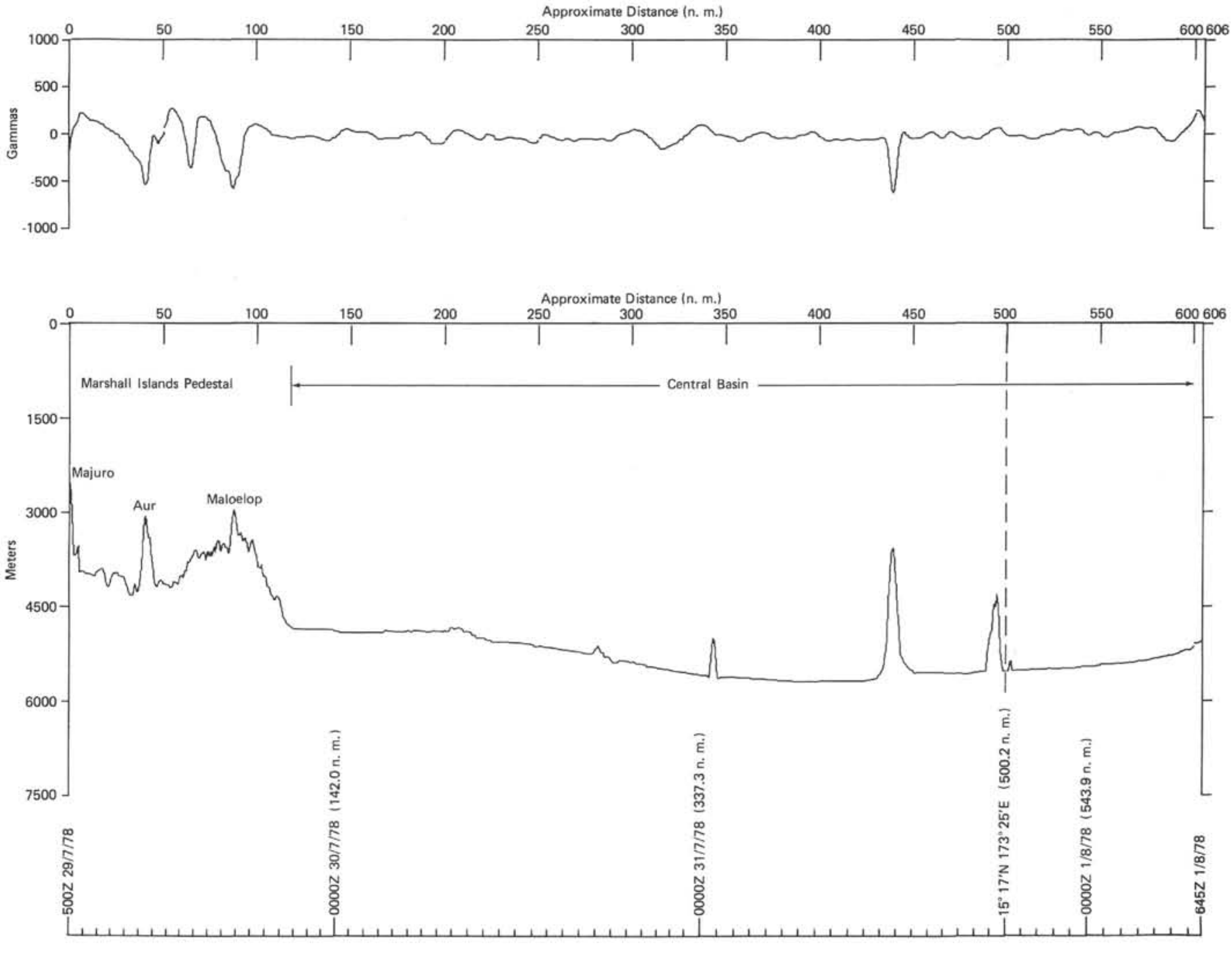

Figure 2. Bathymetric and magnetic-anomaly profiles along the track line of Leg 62. The bottom line shows hourly tic marks, days, and the positions of drill sites and some greater course changes. Distance along track line taken from Table 1 is given for each day, course-change,or site annotation. Numbers along the top of the profile give approximate distance along track line and are not in exact agreement with actual distance values from Table 1. Geological provinces, major bathymetric features, and DSDP drill sites are labeled.

ward to the base of the Mid-Pacific Mountains near mile 600. The gentle relief is pierced by volcanic peaks 600 to 2000 meters high, all of which appear to exhibit current scour around their bases (miles 340, 440, and 490). An offset of about 0.2 sec (fault?) occurs across the largest peak, at mile 440. A strong negative magnetic anomaly is associated with this largest peak.

Mid-Pacific Mountains

The Mid-Pacific Mountains (Figs. 3 and 9, mile 600–980) are the northern boundary of the Central Basin. This bathymetric feature exhibits two broad levels of topography, one at about 5.5 sec (4100-m deep), and the shallower one at about 3.5 sec (2600-m deep). Along our track line, the southern edge of the Mid-Pacific Mountains is marked by a large guyot which separates the lower plateau level (5.5 sec) of the Mid-Pacific Mountains from the Central Basin floor (Figs. 3 and 9, mile 620). The guyot rises to 1.7 sec (about 1300 m deep) and is approximately 21 km across at the top.

Sediments underlying the lower platform level are as much a 1.2-sec thick, exhibit alternating transparent and reflective intervals, and overlie a distinct acoustic basement. Portions of this sediment, especially near mile 750, are offset by closely spaced, near-vertical normal faults that have as much as 0.1-sec displacement. A thin layer of acoustically transparent sediment overlies the faulted section and fills in lows between elevated features.

The flat, lower platform (5.5 sec) gives way to the northern, upper level (3.5 sec) near mile 815 (Fig. 9). This part of the Mid-Pacific Mountains displays hummocky topography, with numerous hyperbolic side echoes, until mile 880; after which a sediment platform extends to the northern edge of the Mid-Pacific Mountains. On this sediment platform is Site 463 (Fig. 3).

North Pacific Basin, I

A part of the large North Pacific Basin lies between the Mid-Pacific Mountains and the southwestern exten-

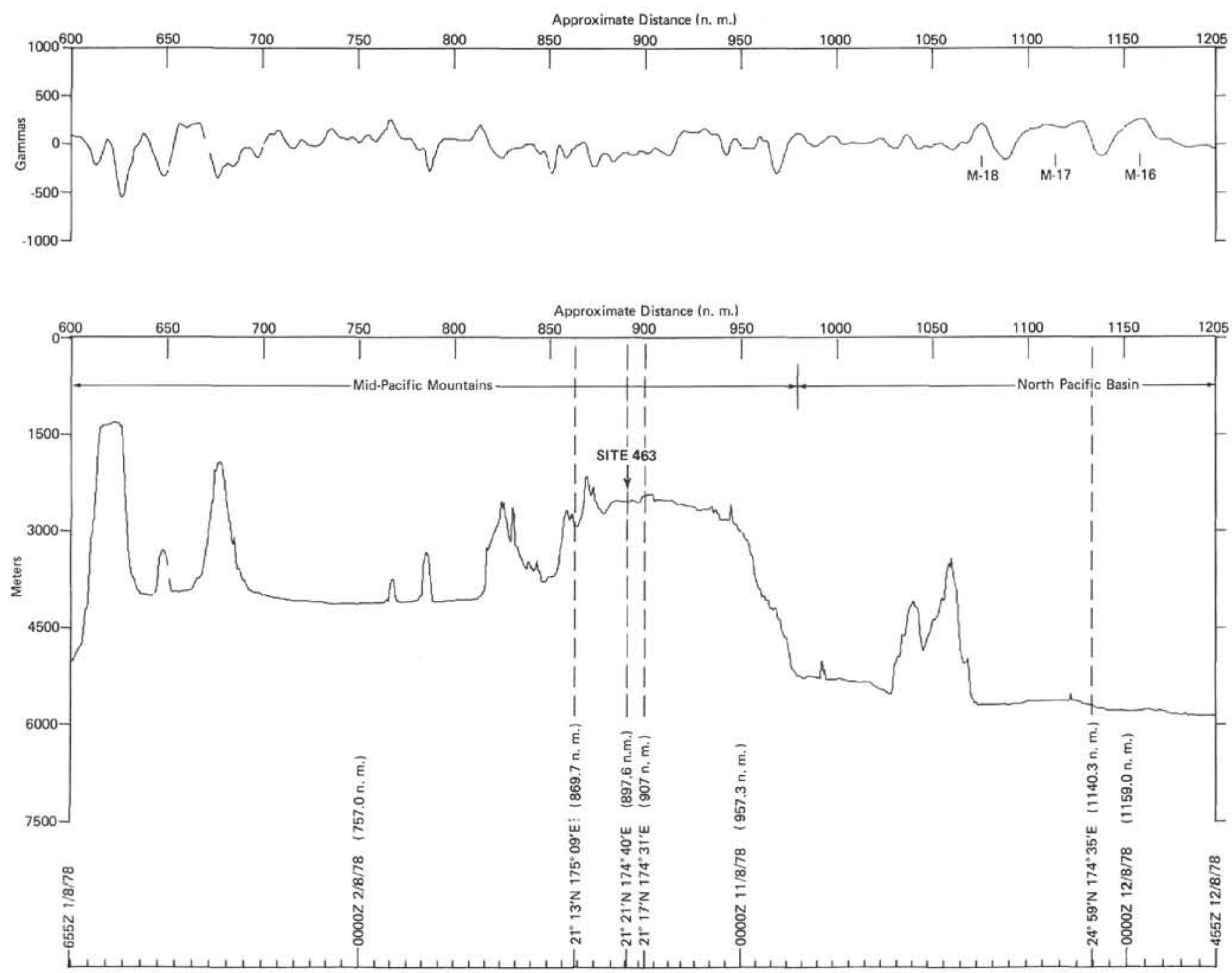

Figure 3. Bathymetric and magnetic-anomaly profiles along the track line of Leg 62. Anomalies labeled M-18, M-17, and M-16 are a portion of the Mesozoic magnetic-anomaly sequence. Annotations are the same as for Figure 2.

sion of Hess Rise (Figs. 3, 4, and 9, mile 980–1650). The basin floor slopes northward from the base of the Mid-Pacific Mountains to a point near mile 1300, where the sea-floor depth reaches nearly 8.0 sec (~6000 m). From mile 1300, the sea floor rises northward to the base of Hess Rise, interrupted by the Mendocino Fracture Zone at mile 1430 to 1510. Our track line fell between the seamounts near the Hawaii–Emperor bend, passing just east of Kanmu Seamount. The unnamed seamount near mile 1460, which has about 3.0 sec (~2250 m) of relief, lies near Jenkins Seamount.

Seismic-reflection profiles across the North Pacific Basin show three sedimentary layers: two well-stratified ones that underlie a thin transparent layer (e.g., near mile 1200). Maximum sediment thickness exceeds 0.5 sec. DSDP Site 311 at 28°07.5′N, 179°44.3′E lies about 560 km east of our track line, in 5780 meters of water. At Site 311, 15 meters of red clay overlies a sequence of volcanic turbidite sands (Larson, Moberly, et al., 1975).

Linear magnetic anomalies between miles 1070 and 1400 (Figs. 3 and 4), south of the Mendocino Fracture Zone, correlate with anomalies M-11 to M-18 of the Mesozoic magnetic anomaly sequence. These anomalies are believed to range in age from 126 to 139 m.y. (Larson and Hilde, 1975).

Southwestern Hess Rise

The southwestern extension of Hess Rise is a northwest-trending ridge that lies between mile 1650 and 1765 of the track line (Figs. 4 and 9). Hess Rise appears as a broad arch on the profiles, rising from the basin floor to 4.5 sec (~3400 m); a small peak rises above that general upper level of the rise. A series of normal faults with up to 0.5 sec of offset (mile 1660) characterize the southern slope of Hess Rise. Seismic-reflection profiles show two layers that display acoustic stratification. The upper layer, which reaches 0.4 sec in thickness, is only locally present. It becomes more acoustically transparent toward its base. The lower unit displays another 0.4 sec of sediment that shows continuous, well-developed acoustic reflectors.

North Pacific Basin, II

That part of the deep-sea floor bounded by the Emperor Seamounts to the west and Hess Rise on the

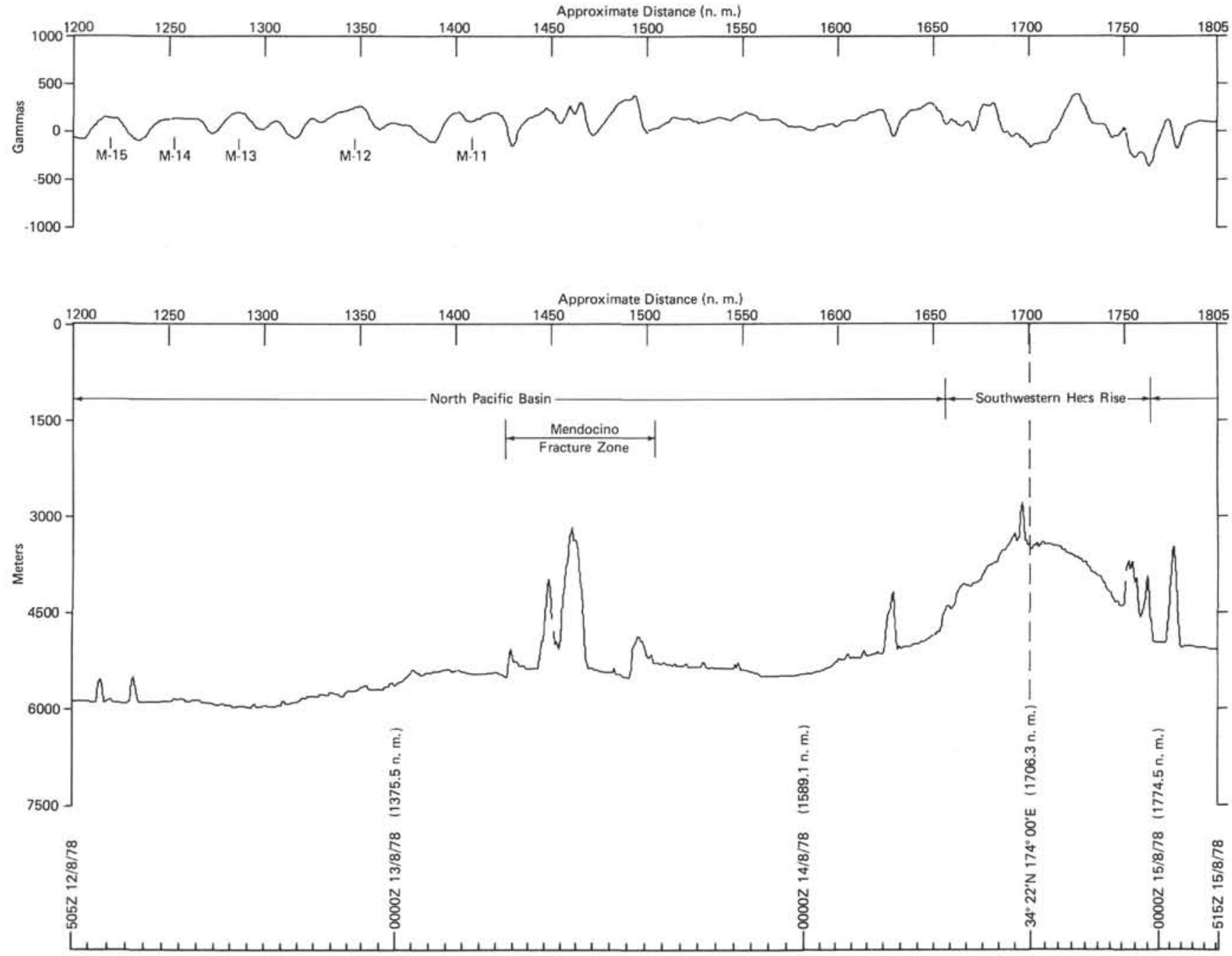

Figure 4. Bathymetric and magnetic-anomaly profiles along the track line of Leg 62. Anomalies labeled M-15 to M-11 are a portion of the Mesozoic magnetic-anomaly sequence. Annotations are the same as for Figure 2.

north, east and south (Figs. 4, 5, and 9, mile 1765–1985) lies at a regional depth of about 7.0 to 7.5 sec (5200–5600 m). The seismic-reflection profiles show a well-developed transparent layer about 0.1-sec thick overlying 0.25 sec of material having closely spaced, continuous reflectors. Beneath this layer is a unit as thick as 0.3 sec, characterized by strong, but more widely spaced reflecting horizons. Near mile 1950, a series of features characterized by less-coherent internal reflectors protrudes through the more-reflective horizons; the transparent layer conforms to the upper surfaces of these features.

Hess Rise

Hess Rise is a large plateau that stands 1000 to 3000 meters above the floor of the central North Pacific Ocean (Figs. 5, 6, and 9, mile 1985–2620). Based on our data and those from previous seismic lines, there are two distinct large-scale morphological trends on Hess Rise: (1) a north-northwestern-trending region at about 4000 to 45000 meters depth that extends from 34°N to 40°N; and (2) a west-southwest-trending southern edge. This southern part stands about 2000 meters above the more northerly regions. Mellish Bank, the shallowest point of Hess Rise, comes to within 117 meters of the sea surface. The south-facing scarp that forms the southern margin of Hess Rise has a total relief of 4.5 sec (~3400 m) and coincides with the northern boundary of the Mendocino Fracture Zone.

Block faulting occurs across much of the rise and is responsible for most of the surface morphology. The offset along these faults is as much s 0.5 sec (~400 m); they are exceptionally well defined on Figure 9. Seismic stratigraphy of the northern part of the rise shows a transparent layer up to 0.1-sec thick overlying a well-stratified unit with more widely spaced reflectors. At Site 464, this lower, well-stratified unit is limestone. The lower acoustic layer becomes more transparent near Site 310. On the southern, upraised part of Hess Rise (Fig. 9), the seismic units are a surface layer 0.15 sec thick, exhibiting closely spaced, continuous reflectors, overlying a more-transparent unit about 0.25-sec thick near Site 465 (mile 2500). Sediments appear to be ponded in several small, fault-bounded troughs.

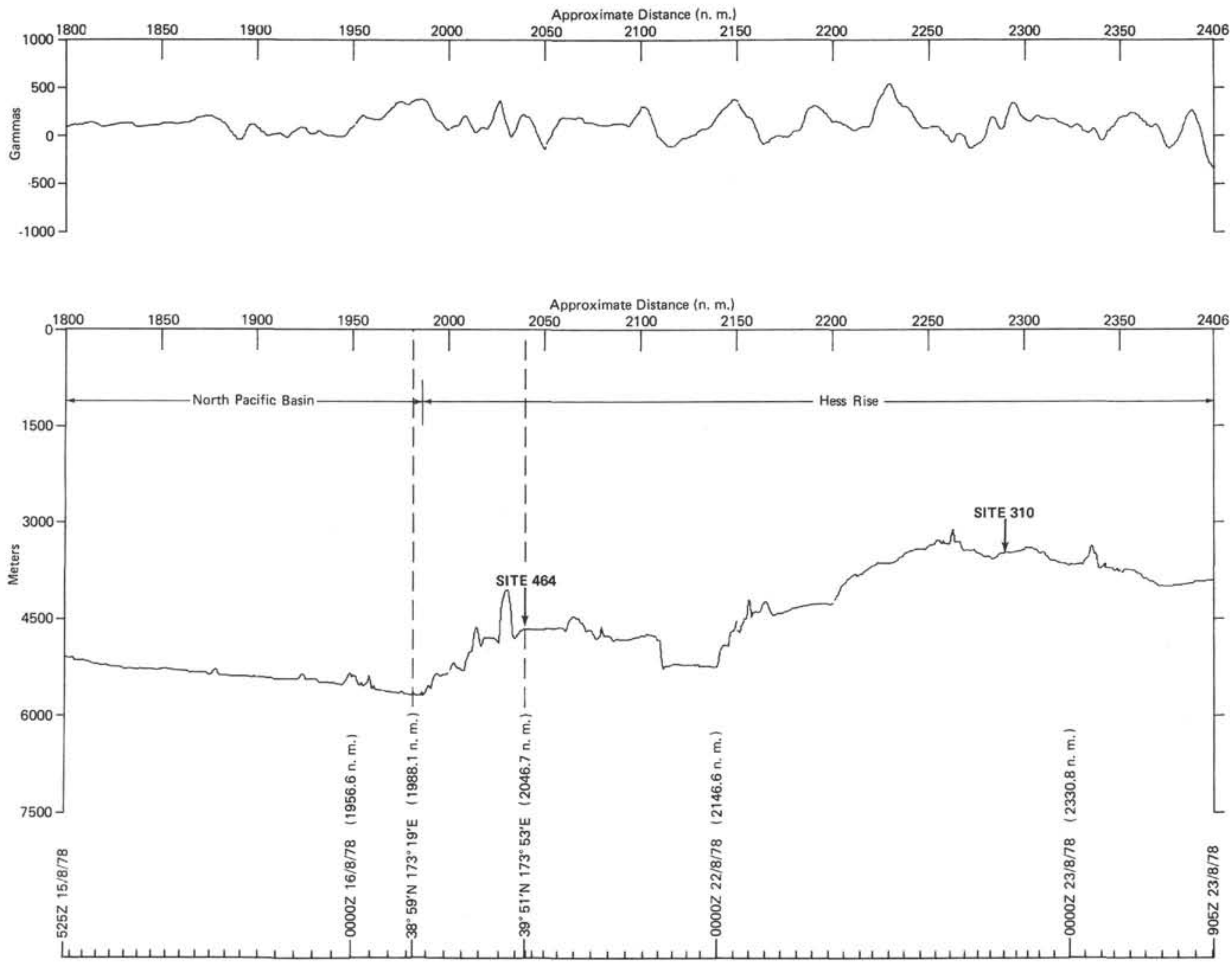

Figure 5. Bathymetric and magnetic-anomaly profiles along the track line of Leg 62. Annotations are the same as for Figure 2.

North Pacific Basin, III

Between Hess Rise and Hawaii, the ship traversed the North Pacific Basin, north of the Hawaiian Ridge (Figs. 6–9, mile 2620–3870). West of the seamount chain that extends northwest from Gardner Pinnacles to Hess Rise, the sea floor displays rough and irregular abyssal-hill topography (Figs. 6, 7, and 9, mile 2620–3020). Much of this topography, which has a relief of 0.2 to 0.3 sec with occasional larger features, appears to be fault controlled. From mile 3020 to the end of the track line, we crossed the Hawaiian Arch and Deep and the lowermost part of the Hawaiian Ridge, which are characterized by much smoother topography.

Two of the major North Pacific fracture zones, the Mendocino and the Murray, appear on our track line. The Mendocino (Fig. 6, mile 2620–2720) forms the southern boundary of the Hess Rise. The Murray fracture zone (Fig. 7, mile 3290–3385) is characterized by a single physiographic peak and a series of large magnetic anomalies. This magnetic signature is characteristic of the Murray fracture zone west of the Musicians Seamounts (Rea, 1970).

Seismic-reflection profiles reveal three sediment provinces. The sequence just south of Hess Rise (Fig. 9, mile 2640) is similar to that on the northern part of the rise. A thin, transparent layer overlies a weakly stratified unit and a coarsely stratified basal layer. Farther to the southeast, the upper layering gives way to a thin, transparent layer that overlies the coarsely stratified basal layer in the region of abyssal hills (Fig. 9, mile 2800). As the line approaches the outer flank of the Hawaiian Arch, the transparent layer disappears, and sediments form a single, flat-lying unit with strong internal reflectors. Pinnacles of acoustic basement occasionally penetrate the sedimentary layer. This simple acoustic layering continues to the end of the track line.

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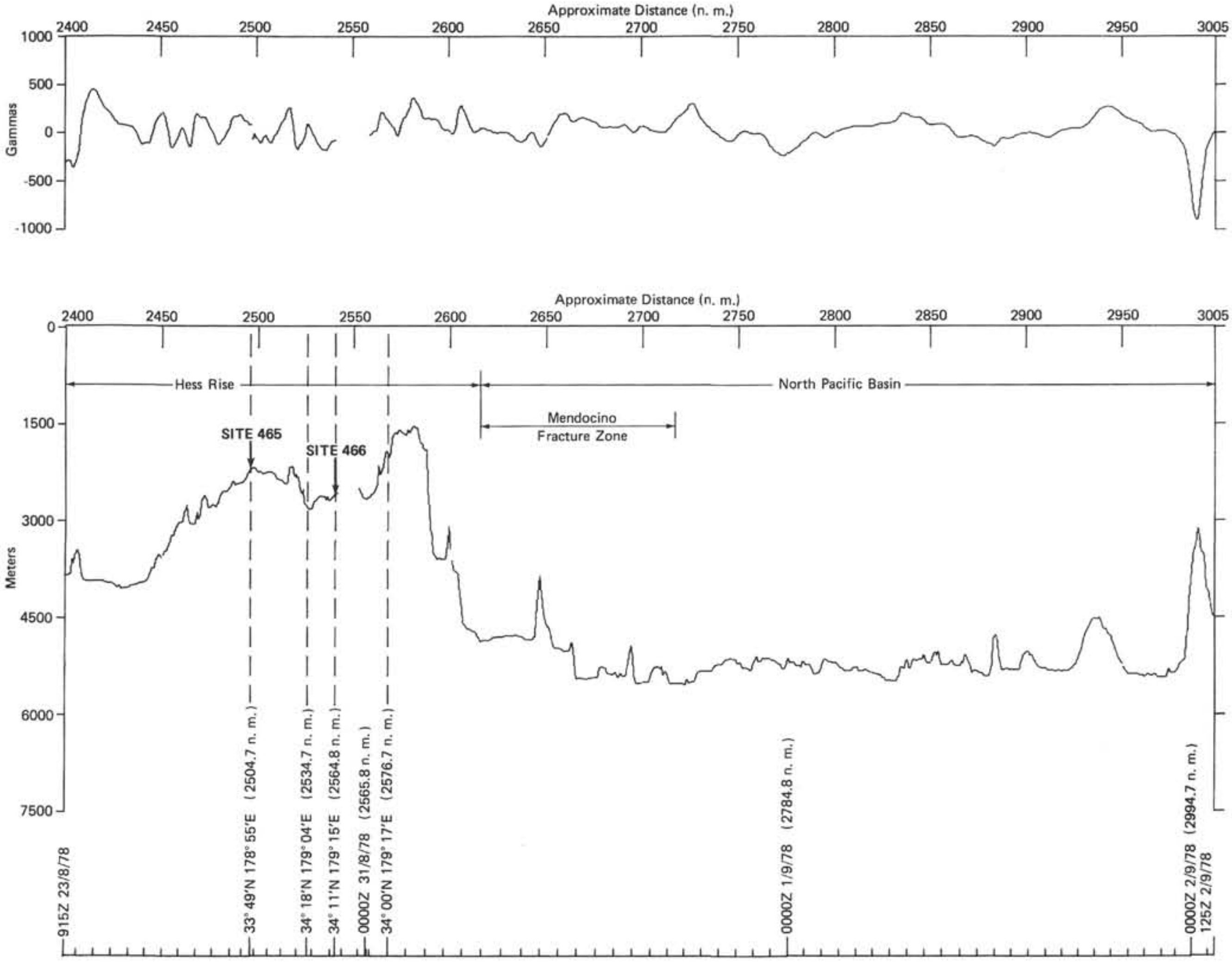

Figure 6. Bathymetric and magnetic-anomaly profiles along the track line of Leg 62. Annotations are the same as for Figure 2.

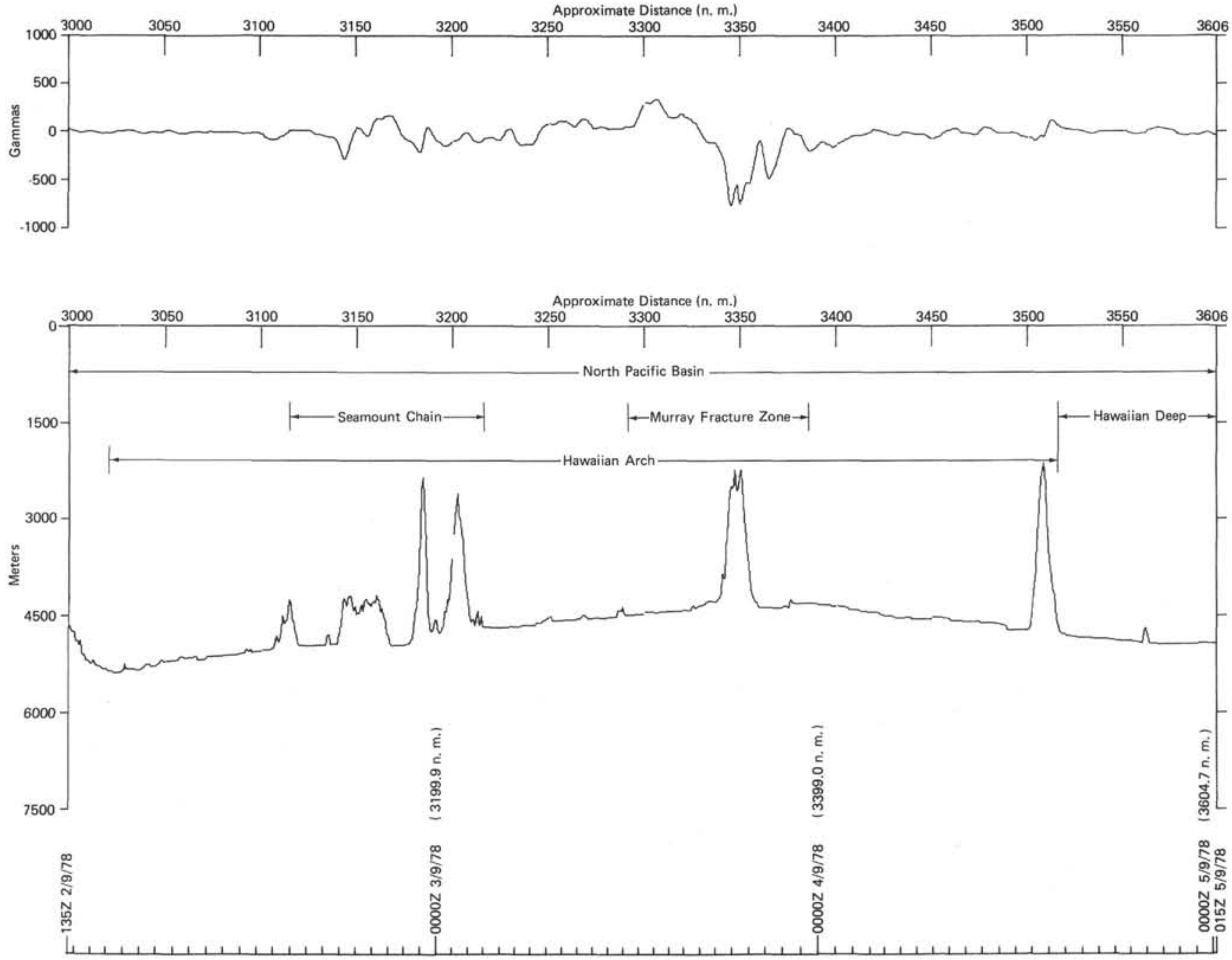

Figure 7. Bathymetric and magnetic-anomaly profiles along the track line of Leg 62. Annotations are the same as for Figure 2.

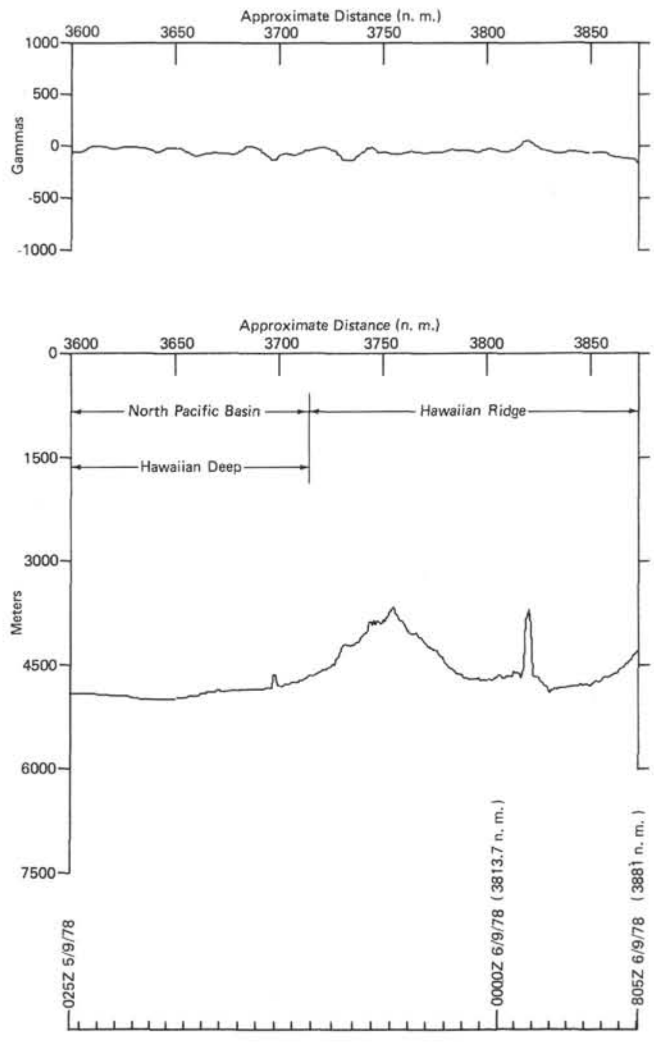

Figure 8. Bathymetric and magnetic-anomaly profiles along the track line of Leg 62. Annotations are the same as for Figure 2.