INTRODUCTION

Leg 92 of the Deep Sea Drilling Project traversed 4621 mi. (8558 km) across the southeastern Pacific Ocean, from Papeete, Tahiti, to Balboa, Panama (Fig. 1). The Glomar Challenger departed Papeete on 23 February 1983 and arrived in Balboa on 18 April.

We collected 12 kHz, 3.5 kHz, and air or water gun continuous seismic reflection profiles and total field magnetometer measurements along the track line. On board the Challenger, total field magnetic data and depths from echo sounders (which were calibrated by assuming a 1500 m/s sound velocity) were recorded every 5 min. These data were keypunched on shore, plotted in profile form, and edited by DSDP by being compared with the original analog records.

Satellite fixes and all course and speed changes were recorded on board, keypunched on shore, and checked by being run through a navigation smoothing computer program. Results were edited on the basis of reasonable speeds and courses as determined by the program. The corrected navigational data were then merged with the geophysical information to plot the various profiles. Track lines with hourly ticks and day designators appear in Figure 2. Bathymetry and magnetic anomaly profiles, which were determined by removing the 1980 international geomagnetic reference field (IGRF), are plotted in Figure 3. Annotations on these profiles include nautical lines with hourly ticks and day designators appear in Figure 2. Bathymetry and magnetic anomaly profiles, which were determined by removing the 1980 international geomagnetic reference field (IGRF), are plotted in Figure 3. Annotations on these profiles include nautical lines with hourly ticks and day designators appear in Figure 2. 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North of the Garrett Fracture Zone, the eastern boundary of the modern EPR lies along the Bauer Scarp, which separates EPR crust from crust formed at the fossil Galapagos Rise to the east. The Bauer Scarp is one result of the series of ridge jumps that created the present EPR north of 13°S between 8.2 and 5.7 Ma (Rea, 1976, 1978a).

Seafloor spreading magnetic anomalies can be identified along the EPR portion of the track line and correlated to the detailed annotation schemes of Ness et al. (1980) and Harland et al. (1982); Figures 3B to 3D show the general anomaly identifications. Spreading rates were calculated by two slightly different methods. First, rates were determined so that each site, when possible, was in the middle of the anomaly-bound interval. These values then represent the rate of crustal formation at each locality. The anomalies chosen to bracket the intervals are given in Table 1; rates were determined along the flow-line direction of 103° as determined from fracture zone trends.

Another calculation was made to determine the average spreading rates for the seafloor between the drill sites, values that are useful for determining past distances to the axis. For these calculations, the magnetic anomaly basement age of each site and distance between sites were used; again rates were determined parallel to the spreading direction of 103° (Table 1).

Sites 597 and 598 lie on crust generated at a rate of 55 to 58 km/m.y., Site 599 on crust generated at 73 km/m.y., and Sites 600 to 602 on crust generated at 84 km/m.y. The present west flank spreading rate is 70.4 km/m.y. in the 20°S EPR axial survey area (Rea, 1978b) and 66.5 km/m.y. along the Leg 92 track, which crosses the axis at 16.6°S (Table 1). The new information to be derived from the values in the table is the high spreading rate of 93 km/m.y. for the interval between Sites 599 and 600–602.

**Bauer Basin**

The Bauer Basin, which lies between the EPR and the fossil Galapagos Rise, occurs between miles 2770 and 3700 along the Leg 92 track line (Figs. 3E to 3G). The position of the northern edge of the Bauer Basin and the southern edge of the Carnegie Platform (Fig. 3G) was chosen arbitrarily.

The topography of the Bauer Basin is more rugged than it is along the EPR, with several hundred meters of relief south of Gofar Fracture Zone and perhaps 200 m of relief to the north. Increased sediment accumulation north of about 5°S reduces the topographic relief.

Seismic-reflection profiles (Fig. 4) show 0.1 to 0.2 s of sediment in the central portion of the Bauer Basin. Farther north, the influence of the equatorial high-productivity zone becomes important, and sediment thickness approaches or exceeds 0.5 s. The sediments display multiple internal reflectors that appear to conform to basement. Numerous vertical offsets occur; many penetrate the entire sediment column.

The southeastern extension of the broad Gofar Fracture Zone occurs between miles 3110 and 3200 (Fig. 3F). This fracture zone is probably the direct geological descendant of the transform fault that, prior to about 12 Ma, must have linked the northern end of the fossil Galapagos Rise with the southern end of the now extinct Mathematicians–Clipperton spreading ridge, which presently lies at 3°S, 115°W (Rea and Malfait, 1974; van Andel et al., 1975; Rea, 1978a). Along the Leg 92 track line, crust south of the Gofar Fracture Zone was formed at the Galapagos Rise, that to the north at the EPR.

Seafloor spreading magnetic anomalies are not identifiable in the Bauer Basin. Two distinct anomalies, at miles 3130 and 3180 (Fig. 3F), occur in conjunction with the Gofar Fracture Zone.

**Carnegie Platform and Ridge**

The Carnegie Platform and Ridge (Fig. 3G, miles 3700 to 4050) lie on seafloor formed along the Galapagos Rift zone (GRZ) in the Panama Basin. The transition to GRZ crust is apparent in both the bathymetry (the shoaling at about mile 3700) and the magnetic anomalies (which show a sudden increase in amplitude at mile 3750). This tran-
Figure 2. Map of Leg 92 track line showing day designators and hourly tick marks. Slow progress from 24 to 26 February was the result of typhoon Nisha.
sition in the magnetic pattern from smooth to rough is especially indicative of a traverse from crust formed near the equator at a north-south-trending axis to crust formed near the Transi- tion in the magnetic pattern from smooth to rough is especially indicative of a traverse from crust formed near the equator at a north-south-trending axis to crust formed near the Transi- tion in the magnetic pattern from smooth to rough is especially indicative of a traverse from crust formed near the equator at a north-south-trending axis to crust formed near the Transi- tion in the magnetic pattern from smooth to rough is especially indicative of a traverse from crust formed near the equator at a north-south-trending axis to crust formed near the Transi-

**Table 1. Seafloor spreading rates along the Leg 92 trackline. Anomaly nomenclature and time scale are from Harland et al. (1982).**

<table>
<thead>
<tr>
<th>Site</th>
<th>Spreading rate for interval with site in center (km/m.y.)</th>
<th>Anomalies bounding intervals</th>
<th>Anomaly age of basement at site (Ma)</th>
<th>Spreading rate between drill sites (km/m.y.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>597</td>
<td>55.4</td>
<td>Young edge 12, young edge 7</td>
<td>28.6</td>
<td></td>
</tr>
<tr>
<td>598</td>
<td>57.3&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Old edge 3B.1, young edge 5A.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>599</td>
<td>73.3</td>
<td>Young edge 5A.1, old edge 3A</td>
<td>7.8</td>
<td>61.2</td>
</tr>
<tr>
<td>600-602</td>
<td>84.0</td>
<td>Old edge 3A, young edge 2A</td>
<td>4.6</td>
<td>93.1</td>
</tr>
<tr>
<td>Axis</td>
<td>60.4&lt;sup&gt;c&lt;/sup&gt;66.5</td>
<td>Young edge 2A, young edge 3A</td>
<td>0</td>
<td>75.6</td>
</tr>
</tbody>
</table>

<sup>a</sup> Discontinuity at Austral Fracture Zone (see text).
<sup>b</sup> From anomalies younger than site only.
<sup>c</sup> In the 20°S survey area (Rea, 1978b).
<sup>d</sup> Along the Leg 92 axis crossing at 16.6°S.

Sediment cover in the Panama Basin (Fig. 4) is thin and irregular on the steeper slopes but moderately thick in the more level positions. Ponding appears to be common. There is 0.3 s of sediment in the vicinity of Site 504 that does not show coherent internal reflectors, possibly because of the many small vertical offsets. The seaward wall of the Colombian–Panama Trench has 0.4 to 0.6 s of generally transparent sediment. Within the trench itself the sediment thickness could not be determined; the Edo-1 recorder was able to follow basement to a subbottom depth of 0.9 s before losing it. The trench sediments are characterized by a few faint, flat-lying reflectors (Fig. 4).

**ACKNOWLEDGMENTS**

On board the *Challenger*, T. Gustafson, the laboratory officer, ensured a smooth data-handling operation. The plots and profiles presented here were generated by the Geological Data Center at the Scripps Institution of Oceanography. I thank Keir Becker for providing a review of the manuscript.

**REFERENCES**


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Figure 3. Bathymetric and magnetic anomaly profiles along the track line of Leg 92. The bottom line shows hourly tick marks, days, locations of drill sites, and some larger course changes. Numbers along tops of profiles are distance along track line in nautical miles. Geological provinces, major structural features, magnetic anomalies, and DSDP sites are labeled. A to H are track line segments referred to in text.
Figure 3 (continued).
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