VI. MAGNETIC ANOMALIES

Takemi Ishihara and Kensaku Tamaki

Measurement of total magnetic force was carried out with a marine proton magnetometer, GeoMetrics Model G801. Magnetic anomalies were calculated at 5-min intervals, by subtracting IGRF 1965.0 (I.A.G.A., Comission 2, 1969) from the measured total magnetic force.

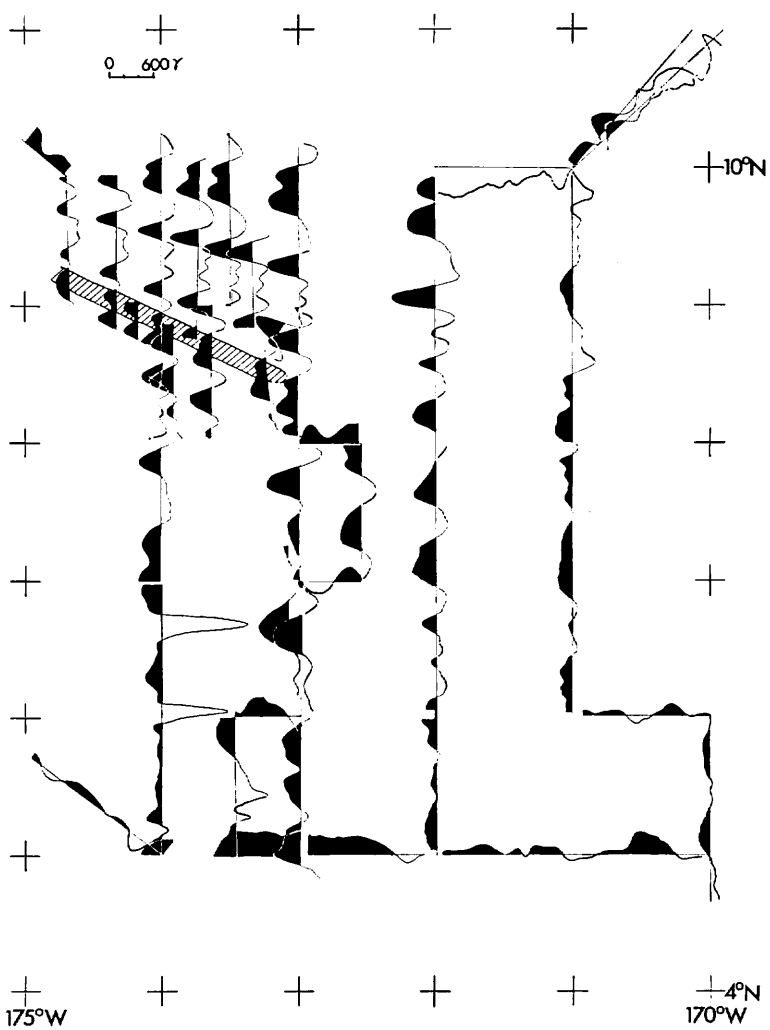

Fig. VI-1 Magnetic anomaly data in the survey area. Positive anomalies are filled in black. Hatched portion is the GH 76-1 Trough.

Results

All the magnetic anomaly profiles obtained are summarized in Fig. VI-1.

As apparent from the figure, a striking lineation pattern is observed in the northwestern part of the survey area. Anomalies have peak to peak amplitudes of 400γ to 600γ, which are somewhat less than those of the Phoenix lineation set, just southwest of the survey area. The apparent wavelength of the anomalies ranges from 15 to 20 km. The trend of the lineated anomalies change approximately from N85°W at 10°N to N65°W at 9°N, and the pattern has the appearance of a fan which opens to the east. The lineations are distinct west of the meridian 172°W, but are not so obvious to the east. It is noteworthy that the lineations are arranged parallel to the GH76-1 Trough, like as the Phoenix lineations are to the Canton Trough. The northwestern area lineations correspond with the doubtful lineations east of the Magellan Rise described by LARSON *et al.* (1972). According to our survey result, their presence and nature became more clear but their identification is uncertain as yet, though they most likely represent those of early Cretaceous, in reference to the Phoenix lineations.

In the southwestern part of the present area lineations with a direction of approximately N80°E are developed. The lineated anomalies are not so clear, due to the disturbance of seamounts, but they seem to belong to the northern part of Phoenix lineation set. According to LARSON and PITMAN (1972), the lineated anomaly which lies around the southern extremity of the surveyed area is identified to M10 (about 122 m.y.B.P., Early Cretaceous). The transition from the Phoenix lineations to the northwestern lineations is yet unclear.

Two seamounts in the southwestern part along the meridian 174°W are accompanied by sharp magnetic anomalies with minimums of -1150γ and -850γ each. This suggests that these seamounts are normally magnetized.

References

I.A.G.A., COMISSION 2, WORKING GROUP 4 (1969) International geomagnetic reference field 1965.0. *J. Geophys. Res.*, vol. 74, p. 4407–4408.

LARSON, R. L. and PITMAN III, W. C. (1972) World-wide correlation of Mesozoic magnetic anomalies, and its implications. *Geol. Soc. Amer. Bull.*, vol. 83, p. 3645–3662.

————, SMITH, S. M., and CHASE, C. G. (1972) Magnetic lineations of early Cretaceous age in the western equatorial Pacific Ocean. *Earth and Planetary Sci. Lett.*, vol. 15, p. 315–319.