

Geophysical investigation of the central part of the Manihiki Plateau in the central-east Pacific Ocean

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The Manihiki Plateau in central-east Pacific Ocean is one of the Cretaceous Large Igneous Provinces (LIPs). Larson (1997) proposed that the Manihiki Plateau was formed by the same mantle plume that formed the Ontong Java Plateau around 122 Ma. The Manihiki Plateau was formed near the plate boundaries between Pacific and adjacent plate (Winterer et al., 1974), but the configuration of the plate boundaries are obscured. The linear troughs, Danger Islands Troughs, are thought to be a trace of the plate boundaries.

Geophysical Investigation in the northern part of the Danger Islands Troughs was conducted in August 2003 by R/V Hakuho-maru, Ocean Research Institute, the University of Tokyo (KH-03-01 Leg 5). Volcanic rocks were dredged at the slope of the troughs in the cruise. SEA BEAM 2120 multi-narrow beam echo-sounder system was used for the bathymetric survey. The strike of the northern part of Danger Islands Troughs is N20W. The depth of the trough is 6000 m. The width of the trough is about 35 km. The strike of the central part of the troughs is N-S. That of the southern part of the troughs is N20E. The depth of the central and southern parts of Danger Islands Troughs is 4800 m and their relief is very flat because of the thick sediment, which thickness is about 1000 m.

The magnetic anomaly over the trough with an E-W strike that connected to the northern tip of the Danger Islands Troughs is more than 500 nT, although that over the Danger Islands Troughs is less than 200 nT.