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Seismic reflection images in the northern part of the Manihiki Plateau

Yasuyuki Nakamura^{1*}, Ayanori Misawa², Kenji Tara², Katsura Kameo², Masao Nakanishi³

¹JAMSTEC, ²AORI, Univ. Tokyo, ³Chiba University

Manihiki Plateau, located in the central Pacific, is one of the Large Igneous Provinces in the Pacific Ocean. The formation and evolution of this plateau is deeply related with Ontong Java Plateau and Hikurangi Plateau, and study on this plateau is important not only to understand the nature of these plateaus but also to develop a new formation model of the oceanic plateau. In September 2010 we conducted a research cruise in and around the northern part of Manihiki Plateau to obtain new geology and geophysics data with R/V Hakuho-maru of Japan Agency for Marine-Earth Science and Technology. We present here preliminary results from multichannel reflection seismic (MCS) survey carried out during this cruise. The MCS data were obtained along 6 MCS survey lines running across the Northern Basin, Northern Plateau and troughs around them. Total length of the MCS lines is approximately 360 nautical miles. A GI-gun and a 1200 m-long streamer cable was used as the source and the receiver array, respectively. Preliminary near trace seismic profiles show the variability of trough-fill sediments in this area; deeper troughs in the south of the Northern Basin were covered with acoustically transparent sediments, which was not observed in the shallower troughs located in the southwest of the Northern Basin and those around the Northern Plateau. In the northwestern end of the Manihiki Plateau, trough sediment reflectors were disturbed by patchy dim spots, which may suggest later volcanic activity or intrusion in this area.

Keywords: Large Igneous Provinces, Manihiki Plateau, seismic reflection survey