Non-destructive Measurement Results of Water Content Distribution of Drilled Cores and Relative Physical Properties by Wireline Logging in Hole B, TCDP

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Abstract

In the second drilling hole, Hole-B, of Taiwan Chelungpu-fault Drilling Project (TCDP), core samples were continuously retrieved in depth range of 950-1350 m including the Chelungpu fault slipped during 1999 Chi-Chi, Taiwan, earthquake. We did various non-destructive measurements including volumetric water content, density, thermal conductivities etc. on all the core samples of total length 400m. Especially, the water contents profiles in the three fault zones encountered at 1136m, 1194m and

1243m respectively, in the Hole-B, were successfully determined in a 10 cm interval which is enough thick to make comparing the profiles in the three fault zones. At the same time, we will report P-wave velocity, electrical resistivity obtained by wireline downhole logging.

As a result, the profile of volumetric water content revealed a peak in the center of all three fault zones, respectively. Importantly, the water content value in the 1136m fault zone was highest in the three fault zones. A possible explanation of the measured results can be considered as that 1136 m fault zone is youngest due to the compaction effect depends on the elapsed time from seismic slipping.