(Not Presented) **Paper 61**

Geothermal systems within a "pulled-apart" segment of the Philippine Fault (Central Leyte): their characteristics and relation to volcanism and strike-slip tectonics

HENRY J. TEBAR

PNOC-Energy Development Corporation, Merrit Road, Fort Bonifacio, Makati, Metro Manila, Philippines.

The trace of the Early Pliocene to Recent Philippine Fault in Central Leyte forms a 55 km x 5 km "pull-apart" structure within which five discrete hot water-dominated geothermal systems have been delineated. These are: Mahiao–Sambaloran–Malitbog, Paril–Mahanagdong, Alto Peak, Anonang and Mahagnao geothermal prospects. Each of these is characterized by a low (<20 ohm-m) resistivity anomaly that encloses active thermal manifestations, hydrothermally altered ground and a volcanic center. The preliminary microtectonic data show that this area has been subjected to a regional E-directed (092°) compression and a localized NW-NE directed (060°–172°) extension.

Three major hornblende andesite- and dacite-forming volcanic events have been identified in this region: i) the **Late Miocene** (11 Ma) event is represented by the highly eroded Mamban, Cancajanag and Burauen Volcanics; ii) the **Late Pliocene to Early Pleistocene** (~1.6 Ma) event produced several small volume partly eroded volcanic cones and domes, which now show moderate-intense solfataric activity, and iii) the **Late Pleistocene** (<0.5 Ma) event formed two volcanic cones with well-preserved crater structures (Mts. Janagdan and Lobi). These volcanic deposits were emplaced onto a thick sequence of Mid-Tertiary to Recent sedimentary clastics and carbonate lenses that

Warta Geologi (Newsletter of the Geological Society of Malaysia), Vol. 18, No. 6, November-December 1992

overlie ultramafic and metamorphic rocks.

Hence, the geothermal systems within the "pulled-apart" segment of the Philippine Fault in Central Leyte are mainly associated with Late Pliocene to Early Pleistocene volcanism and zones of transtension. This set-up is accompanied usually by a large outflow of geothermal fluids such as in Mahiao–Sambaloran–Malitbog, Paril–Mahanagdong and Anonang geothermal prospects. In contrast, a geothermal system dominated by compressional stresses and centered at a solfataric crater (Alto Peak) or a dome (Mahagnao) exhibits very limited outflow features and normally volcanic-magmatic signatures may be expected.