A Final Report

on

Structural Evolution and Tectonostratigraphic Correlation for the Southern Mergui Basin

By

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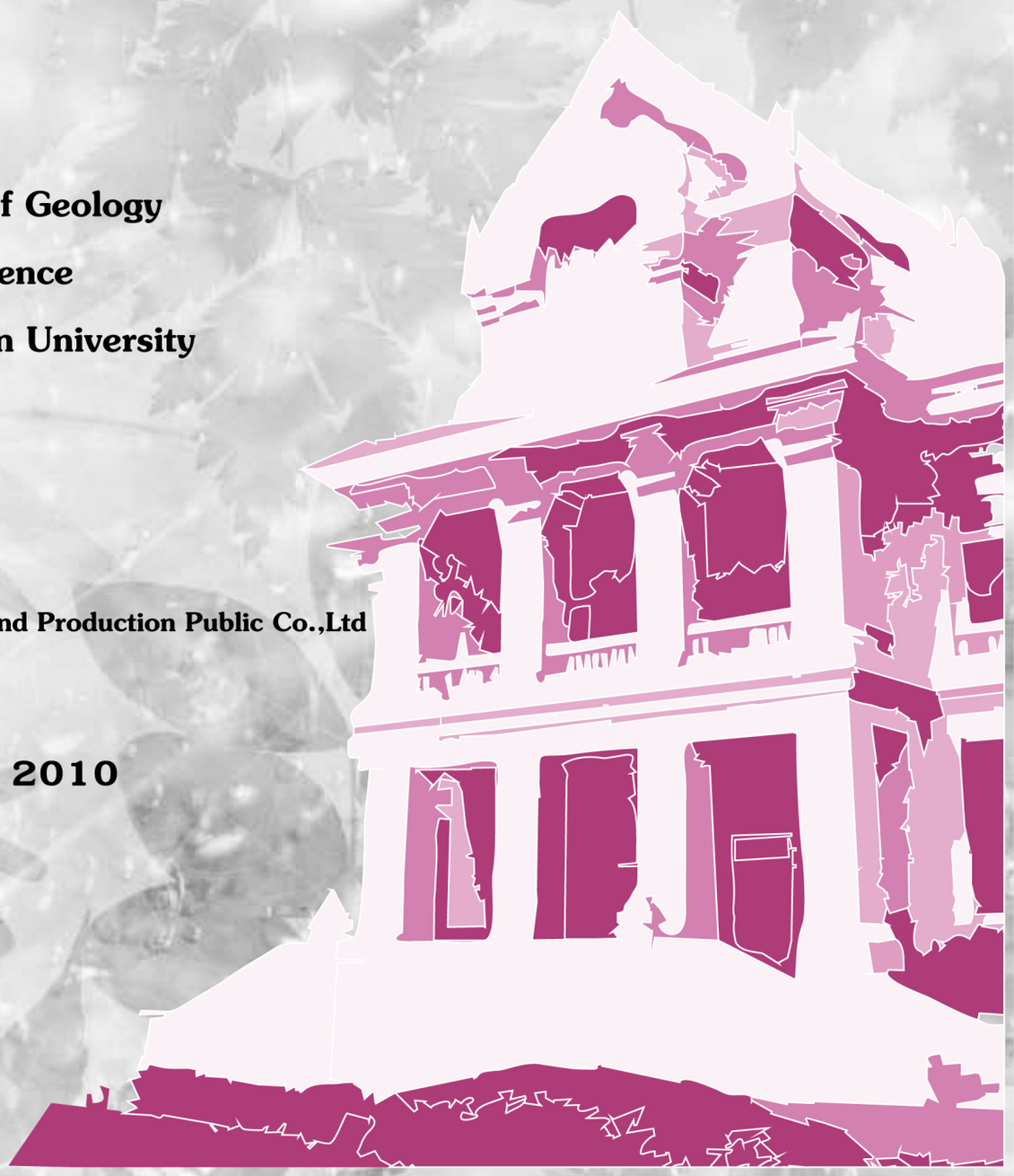

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Abstract

Structural evolution of the Mergui was clarified using the integrated results on previous and current geological, geochronological, seismic, petrographical, in conjunction with data on mineralogical, and palynological analyses. Our result show that among the rocks exposed onshore in Thailand and Myanmar, granitic rocks are by far the most widespread and important. They are bioth I- (or magnetite-series) and S- (or ilmenite-series) type affinities. They are herein regarded as the most probable source rocks or provenance for basin developments in the Andaman (including Mergui) basins.

In the current investigation, 3 samples of granite from southern region (Phuket area) were selectively sampled and analyzed for their age determination using the U-Pb zircon and monazite dating methods. Our current age data together with more than 40 previous age data using the other dating methods were evaluated to interpret their tectonic settings relating to the Mergui basin development. The result confirms one major periods of plutonic emplacement within the Western Granite Belt during the Cretaceous to earliest Tertiary (70-100 Ma). This granite belt may have been formed by eastward subduction of Western Burma block beneath the Shan Thai (or Sibumasu) terrane. of mainly Indosinian orogeny and the other in Cretaceous age (70 to 100 Ma) of mainly Himalayan orogeny. Peak metamorphism and associated with mineralized minor intrusions are considered to have occurred during 50 to 70 Ma of the Himalaya Orogeny. Strong deformation (shearing and mylonitization) may have taken place along the NE - trending major faults (Ranong and Klong Marui Faults) during 40 to 50 Ma which in turn triggered the cooling, unroofing, and uplifting events during 20 to 50 Ma.

Seismic interpretation result together with our updated results on palynological, sequence stratigraphic and geochronological data of granites and sediments lead us to elucidate the structural evolution of the Mergui Basin. Cooling and unroofing of the Cretaceous- Tertiary granites in the western belt may have occurred in Early Miocene in response to Indian-Asian collision during Himalayan Orogeny. This perhaps reactivated the sinistral movement of the major strike – slip Ranong- Klong Maui faults. Rifting of the Andaman sea basins, including Mergui Basin, may have formed in response to such tectonic movement. Several Eocene to Oligocene rift-related basins (about 50 Ma) may have received a voluminous and continuous influx of terrigeneous sediments predominantly from Cretaceous –Tertiary granitoids intrusions. The normal fault – associated, pull apart basins due to releasing bend during Oligocene to

Miocene (15-35 Ma) were dominated by paralic sequence and lacustrine sediments of the Yala Formation with the early rifting, alluvial-fan sediments of the Ranong Formation. After that, the Mergui Basin was in the quiescent thermal subsidence event associated with transtensional component and gave rise to the deposition of Payang, Kantang, and Tai Formations. Compression tectonics with transpression wrenching event along the NE-trending fault with dextral shear movement may have had an influence on basin configuration and development. This perhaps marks the late Middle and in turn may6 have caused deposition of Surin and Trang Formations Miocene Unconformity. The post rift event (younger than 10 Ma) is marked by subsidence without major tilting and give rise to transgression and deposition of marginal marine sediments of the Late Miocene Thalang and Pliocene – Recent Takua Pa Formations..