Petrology of cuttings from oil wells in the Phetchabun basin, Thailand

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The Phetchabun Basin in central Thailand is one of many Tertiary intermontane basins developed in Southeast Asia in response to the collision of India and. Asia. Wells in the basin produce oil from fractured igneous layers in Oligocene to Pliocene lacustrine sedimentary rocks. This study is part of a larger project to investigate the nature of these igneous bodies, and to determine whether they are intrusive or extrusive, and how they correlate throughout the basin. It focuses on two wells (L44G and L44G-D1) drilled north and east of the current oil-producing areas. Cuttings samples have been obtained from depths between 340 m and 1025 m where igneous units are present. Petrographic study of the samples shows that the host rocks are wacke and laminated siltstone, and that the igneous units are mainly intrusive, except for one amygdaloidal basalt flow. The sedimentary rocks display recrystallized textures and spotting in the vicinity of intrusive units as a result of contact metamorphism. During drilling, a variety of materials including crushed limestone, soda ash (trona), and vegetation such as corn cobs were introduced into the wells to try to prevent oil and water from leaking into fractures. The presence of these foreign materials, including marine fossils such as bryozoans, makes the petrographic work challenging. Preliminary results of this study indicate that the intrusions in the wells are anorthositic and leucogabbroic, in contrast to the more normal gabbroic intrusions in the Na Sanum area to the south and Wichian Buri area to the west. However, based on published reports, similar intrusions may be present in the Bo Rang well to the north.

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