

**REGIONAL TECTONICS AND THE NEOGENE GEOLOGY OF NORTHWEST  
SABAH**

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**A model derived from a consideration of regional gravity and  
geological data interprets Cretaceous ophiolites outcropping in northern  
and central Sabah as representing the sea-floor and oceanic crustal**

material which forms the basement to the Eocene-Miocene sediments in the northern portion of the Northwest Borneo Geosyncline.

An east-west compressional regime in the late Lower Miocene resulted in massive crustal rupture, with the eastern part of the geosynclinal pile and the underlying Cretaceous oceanic crust being thrust eastwards over oceanic crust and intermediate "Crystalline Basement" consisting of Triassic and older metamorphosed extinct arc systems interpreted as a northern fragmented extension of Sundaland. The extent of the thrusting varies along its north-south strike. Within the area of available data it is most intense in the Banggi Island/Bengkoka Peninsula area and the Labuk Highlands of central Sabah.

The overthrusting and subsequent isostatic readjustments are reflected in the depositional pattern from the late Lower Miocene onwards. In eastern Sabah debris flows triggered off by explosive volcanic activity from the thrust front produced widespread chaotic slump breccias south and east of the Labuk area; the olistoliths are largely composed of ophiolitic detritus. These chaotic deposits are overlain by shallow-water clastics of the Tanjong Formation derived from the uplifted Crocker and younger formations. Deposition to the north and west off the rising upthrust (the Crocker Range) initiated a major regressive framework which has continued through to the Pliocene and which is responsible for the regional pattern of reservoir distribution offshore northwest Sabah. The late Lower Miocene uplift produced broad NNE-SSW folds in the sediments of northwest Sabah. A prominent angular unconformity separates the Lower Miocene and older rocks from the overlying northwesterly prograding sediments.

A later tectonic phase, commencing within the Upper Miocene, has been responsible for the development of the present structural framework of Northwest Sabah. This phase commenced with basement controlled tensional growth-faulting, oriented generally north-south, which is still occurring. Early in the Pliocene east-west oriented compressional structures began to develop, decreasing in intensity from south to north. The simultaneous development of these two trends is consistent with a dextral shear regime oriented in an approximately NW-SE direction across northern Sabah.

The combination of the regressive depositional framework and later orthogonal structural trends has resulted in a favourable regime for hydrocarbon accumulation in northwest Sabah.