# PETROLOGY OF A BASEMENT CORE FROM THE CHAMPLIN NO. 1 INTERNATIONAL PAPER COMPANY WELL JACKSON COUNTY, MISSISSIPPI

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## Abstract

In May of 1981, eleven feet (3.3 m) of granite from 18,678'-89' (5,793-96 m) was cored on the Wiggins Anticline in the Champlin No. 1 International Paper Company well. Interpreted in the 1920s as a simple anticline and referred to locally as the "Lucedale Ridge", subsequent drilling has delineated the Wiggins as a broad complex feature with the anticlinal axis of Cretaceous-Jurassic sediments north of the axis of a series of basement highs forming the Wiggins Anticline. In the context of plate tectonics, the Wiggins is significant in the understanding of the Ouachita-Appalachian tectonic junction and the origin of the Gulf of Mexico.

Megascopically, the core consists of fine to coarse grained granite with irregular foliations. The foliation is produced by "bands" of biotite that are occasionaly interrupted with ptygmatic folds. Pink plagioclase, white orthoclase and clear to milky quartz phenocrysts are visible and some appear to have been weathered in situ and then subjected to intense regional metamorphic conditions producing selective anatexis.

Preliminary interpretations by Smith et al. (1981), suggested the Wiggins represents an allochthonous block separated by rifting from the South American plate during the opening of the Gulf of Mexico. However, subsequent interpretations utilizing petrographic data and age dates of 272 M.Y. (Amoco No. 1 Cumbest) and 282 M.Y. (Champlin I.P.C.) tend to indicate the Wiggins is a buried southwest continuation of the Appalachian Mountains.

The potential for finding significant hydrocarbon reservoirs in Cretaceous reefs, dolomitized Smackover carbonate shelf sediments and/or Norphlet eolian sandstones on the flanks of the basement features will make exploration for both structural and stratigraphic traps increasingly attractive in this sparsely drilled area.