

DENKMAN SANDSTONE MEMBER - AN IMPORTANT JURASSIC RESERVOIR IN MISSISSIPPI, ALABAMA, AND FLORIDA

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ABSTRACT

A clean, generally well sorted, commonly porous, Jurassic sandstone separates marine lower Smackover carbonate mudstone from nonmarine redbeds of the Norphlet Formation in portions of southern Mississippi, southwestern Alabama, and northwestern Florida. Various workers have considered this sandstone unit to be marine, nonmarine, or a combination, and have called it basal Smackover, Norphlet, or Denkman. Denkman Sandstone was proposed for this unit by Murray (1961) who designated the Lion No. 2 Denkman, Sec. 22, T17N, R4E, Rankin County, Mississippi as the type section. The Denkman locally exceeds 1000 feet in thickness and is a lithologically distinct, mappable unit. Nevertheless, it is included in the Norphlet Formation by the industry and in this paper it is called the Denkman Member of the Norphlet Formation.

The Denkman is overlain generally without gradation by non-sandy basal Smackover carbonates but is gradational downward into redbeds, the more characteristic lithology of the Norphlet. Regionally, the Denkman grades updip into conglomeratic redbeds interpreted to be alluvial fan and fluvial deposits. The Denkman sand typically consists of well sorted, fine to medium grained, rounded and commonly frosted, quartz grains with some feldspar, chert, and rock fragments. The section is commonly cross-bedded and does not contain fossils or carbonate beds. The Denkman usually has good permeability and intergranular porosity ranges up to 25 percent. Unlike sandstone beds in the Smackover, the Denkman rarely contains carbonate cement. The Denkman Sandstone is reddish in its lower part and may contain some thin shaly beds. Regional distribution of the Denkman suggests a sand source to the north and east. Stratigraphic relationships, lithology, and sedimentary structures suggest a nonmarine fluvial to eolian origin for most of the Denkman Sandstone. Locally, the uppermost part was reworked during Smackover transgression. The Denkman Sandstone Member marks the end of the Werner Anhydrite-Louann Salt-Norphlet deposition cycle.

The Denkman Sandstone commonly has excellent reservoir properties and has been found productive at the Pelahatchee, Prairie Branch, Archusa Springs, East Nancy, South State Line, Big Escambia Creek, Flomaton, Little Escambia Creek, Jay and Blackjack Creek Fields. The Denkman Sandstone is and will continue to be an important exploration objective along the southeast part of the Jurassic trend.

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ENERGY AND THE ENVIRONMENT

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ABSTRACT

Man's conversion of natural resources to usable forms of energy has resulted in control and modification of segments of the landscape and environment, free movement over the earth, across the seas and in the sky and penetration of the "solid" earth, the oceans and outer space. The search for energy resources has despoiled segments of the landscape and conversion of fossil fuels and atomic materials to energy has contributed to pollution of the atmosphere, waters, and rocks of the earth.

The exponential increase in energy requirements has brought the U.S. to the verge of a crisis not hitherto experienced by the nation. Factors contributing to the situation are (1) lack of a clearly defined, objective, realistic national energy policy; (2) restrictive, unrealistic price controls which inhibit or eliminate much of the financial incentive for exploration for new reserves and (3) recently, vigorous opposition and actions designed to protect the environment.

The earth's landscape and environment have been transients throughout geologic history. Man has accelerated the natural transformation in many cases but decelerated it in others.

Man has used science, engineering and technology to create as well as to destroy. Realistic and enforceable regulations and laws should be enacted which will permit and encourage exploration and development of energy resources. The ensuing benefits would more than counterbalance the necessary modifications and redesign of the landscape and environment.

The national health and welfare - possibly even the nation's survival - are at stake!

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