

Arid Continental Sand Bodies and Stratal Geometries in the Haynesville Formation as Interpreted from Coherency Processing of a 3-D Seismic Data Cube, Monroe County, Alabama

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ABSTRACT

In an exploratory effort to extend the Frisco City Trend northward and up-dip of its original limits in central Monroe County, Alabama, a twenty-four square mile 3-D seismic program was undertaken in 1998. Acquisition and processing parameters were established to equal or exceed those of previous data sets. As a result, very good imaging was accomplished for the Upper Jurassic targets in the 8,000 to 10,000 foot depth range.

The survey was acquired using deep hole (125') pentapole with a "triple-brick" 110×110 bin design. Throughout the central 80% of the survey 24 to 30 fold data was attained. Following the initial processing, which included DMO pre-stack migration with noise suppression, Coherency Cube Processing was applied to enhance sand body shape, thickness and size recognition.

The basement massifs and inselbergs that underlie the Jurassic sediments demonstrate several episodes of incised valley erosion and subsequent onlapping deposition. Through interpretation, alluvial fan, braided wadi, eolian dune, playa and pediment sand flat deposits were delineated through variable amplitude horizon slice displays. The dunes appear to be best developed on the down-wind side of flat intermontane basins. Intermontane basin centers appear to be composed of flat lying, relatively high amplitude reflectors suggestive of playa evaporites. Low amplitude wadi sands, with their associated braided character, occur as packages of inclined valley fills and constructive, on-lapping bajada aprons. Valley fill Norphlet sand deposits and up-dip Smackover strandline facies were identified in addition to the Haynesville sand body geometries.

