

Abstracts

Scanning Electron Microscope Examination of Shale in Core from the Frio Formation, Brazoria County, Texas

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Scanning electron microscope (SEM) examination of additional core from shallower geopressed and non-geopressed Frio Formation wells in Brazoria County shows fracture patterns and clay textures similar to those in the Skrabanek 1 well reported earlier. The additional wells examined by SEM are 1-B Minnie Mettler, 2,847 to 3,254 m; Pleasant Bayou 1, 3,532 to 4,750 m; and Phillips Petroleum JJ 1, 4,919 to 5,128 m. We noted that shales occurring from 2,744 to 5,488 m have similar grain orientation and fracture patterns. Pleasant Bayou 1 core is

strikingly similar to Skrabanek 1 core, having coarse flakes and grains of quartz and feldspar dispersed throughout. Phillips Petroleum JJ 1 core is more uniform in appearance, lacking distinct clay flakes and scattered grains. Core from 1-B Minnie Mettler is similar in appearance to Phillips Petroleum JJ 1 core, having a uniform distribution of components; however, the clay flakes are less densely packed. Fractures are present in all three wells. Abundant horizontal and vertical fractures at varying depths could act as avenues of fluid flow within geopressed shales.

Near-Surface Sand Resources of the East Texas Shelf

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More than 10,000 km of high-resolution seismic data, several hundred platform borings, and sediment cores were used to map sand bodies within 30 m of the east Texas shelf seafloor. Large sand bodies represent incised valley fluvial sands, deltaic sands, tidal inlet/delta sands, transgressive sand bodies, and modern shoreface sands.

Fluvial sands of the Trinity and Sabine incised valleys are overlain by 20 to 30 m of estuarine deposits. In contrast, the Brazos and Colorado valleys on the inner shelf are sand filled. These sands were reworked during transgression, producing widespread sand bodies. To the east, transgressive sand bodies include Sabine, Heald, Shepard, and Curtis banks; they are generally 7 m thick and formed by reworking of coastal lithosomes.

An extensive, thick (approximately 35 m) distributary channel-mouth bar sand deposit, derived from the Sabine,

western Louisiana, and Trinity Rivers, occurs on the easternmost outer shelf. Another sandy lowstand delta, associated with the ancestral Colorado River, occurs in the western portion of the study area. Muddy bayhead delta facies are discontinuous within the Trinity/Sabine incised valley system. The modern bayhead deltas of the Trinity and Colorado Rivers have sandy mouth bars. Ancestral and modern Brazos River deposits compose fluvial wave-dominated deltas.

Tidal-inlet and related facies are discontinuous within the incised valleys. Modern mud-dominated flood-tidal deltas occupy the Trinity and Sabine incised valleys. Shoreface sands off the east Texas coast are confined to a narrow zone extending a few kilometers from shore. Offshore storm beds are virtually absent in this area.