

Lusk Strawn Field, Lea County New Mexico – Where is the Production Really Coming From In This “Phylloid Algal Buildup” Reservoir? Core Analysis Tells The Tale

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Exploring for Strawn carbonate buildups on the Northwest Shelf has always been challenging. The productive “buildups” often look similar to non-productive “anomalies” on logs. Exploring for them seismically has been referred to as “trying to find a hockey puck frozen in an ice rink”. A total of 10 cores from the Lusk Strawn Field area have been described and correlated to the available logs by the four students listed as authors. There are a wider variety of deeper, open shelf facies than had been anticipated. Most importantly, the “in-place” phylloid algal buildups are never porous and permeable and are NOT the reservoirs in this play.

Depositional environments identified in the cored intervals include open shelf, sponge buildups, encrusting algal deposits, shallower and deeper water phylloid algal buildup debris aprons, phylloid algal buildups, muddy shelf facies, burrowed and intraclast-bearing open shelf, and deepest water argillaceous mudstones, shales and sandstones.

Open shelf deposits range from wackestones to grain dominated packstones with a wide variety of marine organisms including brachiopods, crinoids, fusulinids, bryozoan, encrusting forams, gastropods and scattered corals. In-place phylloid algal buildups contain large, unbroken phylloids in a mud-dominated packstone matrix with virtually no other organisms present. Phylloid algal debris aprons are mud-dominated to grain-dominated packstones with broken phylloids and a wide variety of other open marine organisms. They are often brecciated, may display dipping beds and dipping geopetals and contain a variety of



secondary pore types. Sponge buildups are mud-dominated packstones to boundstones with small sponges. They are rarely more than 2 feet thick. Muddy shelf facies are wackestone that contain a fauna of sponges and corals. The deepest water facies are argillaceous mudstones to calcareous sandstones with rare influxes of brachiopod and crinoid debris.

None of the in-place phylloid algal buildups display porosity and permeability. All reservoir intervals occur in the debris aprons. Thus exploring for in-place phylloid algal mounds is a waste of time. Exploration should be concentrated on the grain-supported debris aprons. There are a number of depositional cycles in the productive Strawn interval and production is scattered through several of these cycles. Thus lateral continuity from one well to another is unlikely.

