

## Marshall Prospect Project Summary

*Provide by Mesa Resources, Inc.*

The Marshall Prospect consists of 277 acres located in the northern portion of McCulloch County, Texas. The prospect acreage is on the western flank of the EXOC (980) Field, which was discovered in the late 1970's. Development of the field continued into the early 1980's, and minor additional development occurred in the mid-1990's.

The Strawn Sandstone is the primary formation of interest for the Marshall Prospect and is expected to be encountered at approximately 1000'. The Caddo Lime, Canyon Lime, and Palo Pinto Lime have also been productive within the area but have been less explored and appear to be less prolific than the Strawn.

The general area is characterized by small-scale development by mom-and-pop operators (unbounded leases/field) and by inefficient completions. The Bishop Biemer Lease, located less than one mile east of the Marshall Prospect acreage, is one of few examples of more efficient development. The Bishop Biemer Lease was originally developed with five wells in 1976, and three additional development wells were drilled in the mid-1990's. Bishop Biemer Lease wells have averaged approximately 20 MBO/well, and the lease still remains active.

More recently, Flint Rock Resources drilled 10 wells on the Appleton Lease directly offsetting the western edge of the Bishop Biemer Lease (between the Marshall Prospect and Bishop Biemer Lease; just over  $\frac{1}{2}$  mile from the Marshall Prospect area). Appleton Lease wells IP'd from 7-60 BOPD and are currently being choked back awaiting improved commodity prices.

Geological mapping suggests that the Marshall Prospect area is on-strike with the Bishop Biemer and Appleton Leases, and the lease position presents a potential opportunity to access undrained portions of the Strawn in the still-unbounded EXOC (980) Field.

### Reservoir Characteristics

The Strawn is primarily a sandstone throughout the prospect area, but data indicates development of carbonate lenses in some cases. The gross Strawn interval ranges in thickness from 20-60' with net pay intervals generally in the 10-40' range based on log signatures from productive wells. Per available density/neutron porosity logs, more prolific Strawn wells exhibit porosities of approximately 20-28%. However, especially in the eastern portion of the field, the Strawn has been commercially productive with porosities of 10-15%. If porosity of less than 15% is encountered, Strawn wells may require small frac treatments to maintain commercial production.

### Depositional Environment

Investigation of Strawn log signatures, both from productive wells and from dry holes, indicates the potential presence of multiple depositional environments. The most prolific Strawn wells are characterized by a blocky gamma-ray signature, which appears to correlate with improved reservoir properties. Blocky GR signatures are indicative of a high-energy environment and are most commonly associated with tidal or fluvial channels within a delta plain.

Fining upward sequences within the Strawn are the most common within the general Marshall Prospect area and are almost always associated with channels. Coarsening upward GR signatures (delta

front/shoreline) have been observed but are rare and are contained within the eastern portions of the field.

The combination of all three GR signatures likely confirms a deltaic environment characterized by a relatively complex channel system.

With respect to the Marshall Prospect acreage, boundary wells and regional trends suggest that the channel, and in turn excellent reservoir properties, extends westward from the Bishop Biemer and Appleton Leases. In general, improved reservoir properties are contained within the northern and western bounds of the EXOC (980) Field.

Although limited well control exists to the South, log data suggests that a pinch out provides the trapping mechanism. Considering that the Bishop Biemer and Appleton Leases do not appear to be located on a structural nose, and that no evidence of faulting exists in the western portion of the field, stratigraphic trapping can be inferred with some degree of certainty.

#### **Drive Mechanism**

From a reservoir engineering standpoint, the Strawn appears to be a multi-phase reservoir with a relatively strong water drive. In the eastern portion of the field, the Strawn exhibits multiple lenses with the upper lense typically producing gas and the lower producing oil. Within the less compartmentalized portions of the field, like the Bishop Biemer and Appleton Leases, hydrocarbon saturation varies with structure and gas-oil contacts can be inferred based on production characteristics.

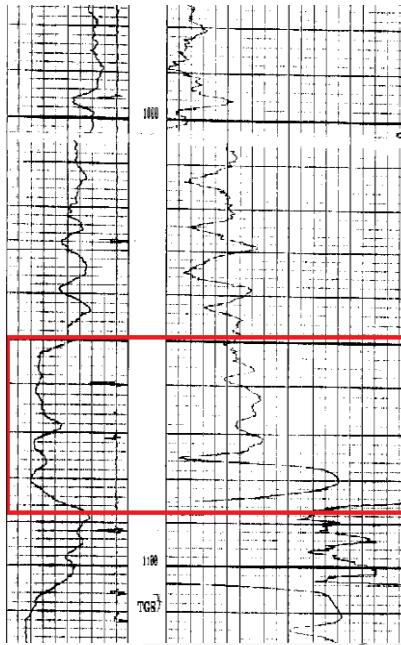
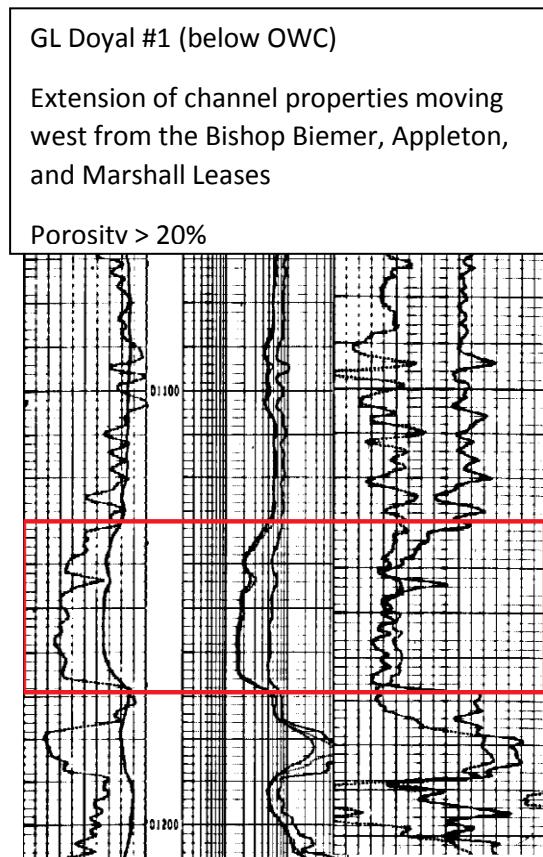
Strawn wells appear to become uneconomical due to water influx in most cases and may have been plugged prematurely in some cases.

Regional mapping suggests relatively uniform dipping from SE-NW, and local trends indicate that the Strawn should be encountered above the regional oil-water contact on nearly all of the Marshall Prospect acreage.

#### **Development and Exploration**

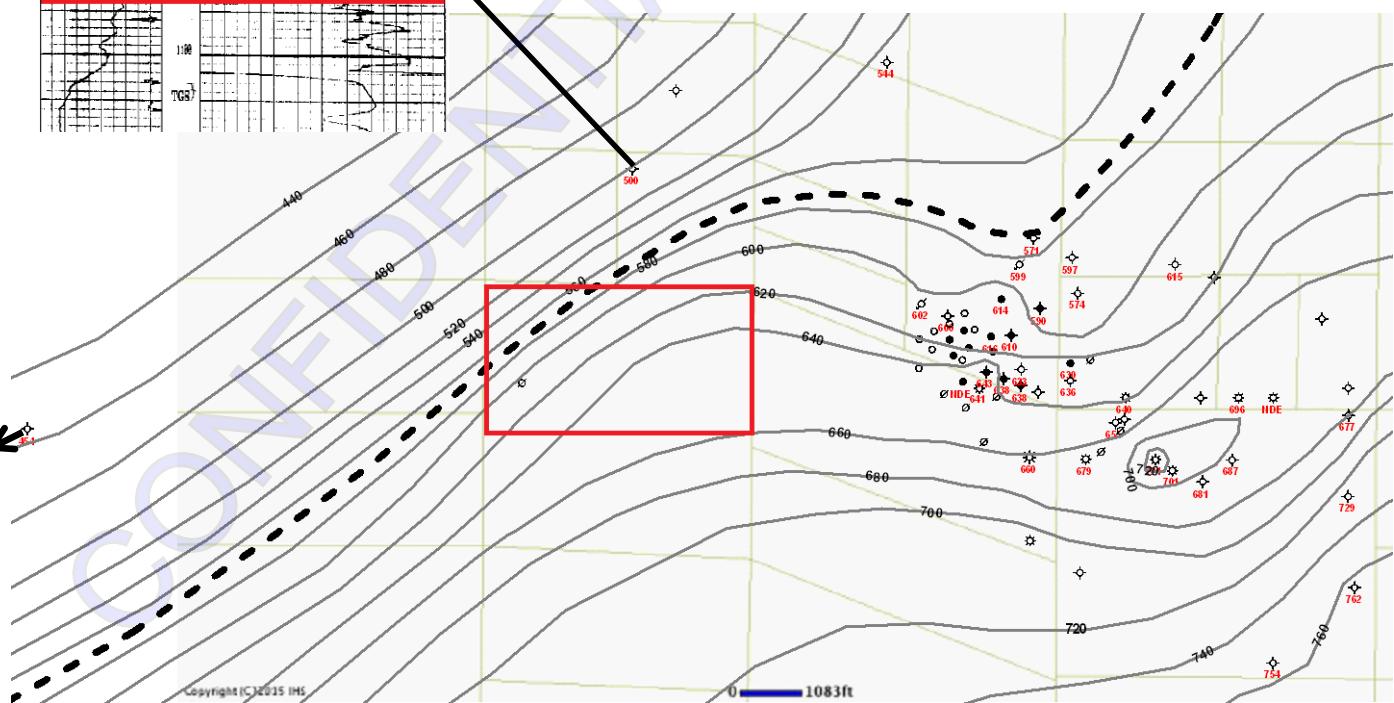
In most cases within the field, leases appear to be unbounded in multiple directions. The most successful “redevelopment” wells in the area, like the Appleton Lease wells, have targeted the flanks of pre-discovered fields and appear to have encountered either extended structure or lesser drained areas.

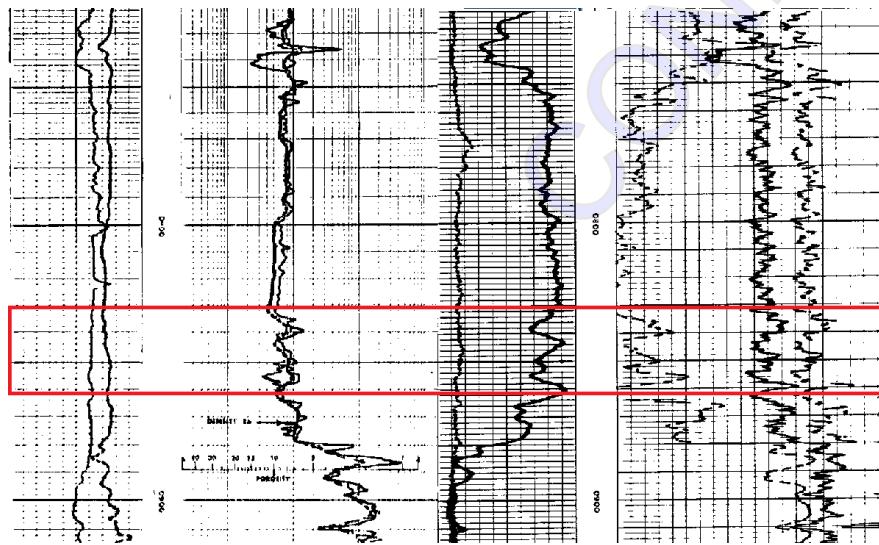
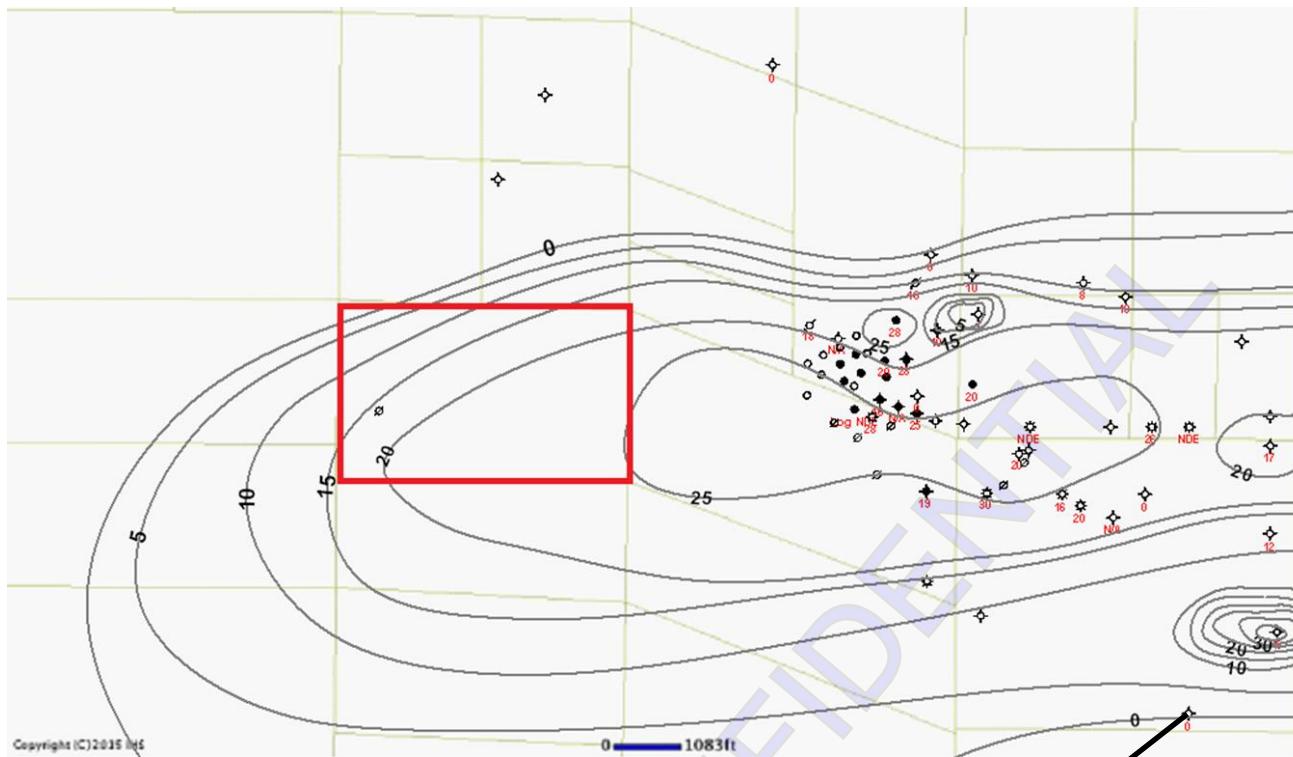
In the case of the Marshall Prospect area, prudent development should likely begin with eastern portion of the prospect area. Initial development wells will offset the Appleton Lease and can be expected to encounter channel-like reservoir properties while finding the Strawn at least 20' above the regional oil-water contact.



Solsberry #1 (below OWC)

Neutron log only; indicates likely development of  
Strawn Sandstone (porosity ~ 20%) north of the  
Marshall Prospect acreage





Woodward #7

Boundary well; Strawn undeveloped

No well control, or no wells with logs, to define  
'pinch-out' south of the Appleton/Bishop  
Biemer/Marshall Leases (unbounded)