RIATA ENERGY, INC
LONGFELLOW RANCH
PECOS COUNTY, TEXAS

Exploration – Development Potential

Oil and Gas Exploration and Development on the Longfellow Ranch involves three major geological trends. They consist of:

1) Val Verde Basin Paleozoic Structure – locally referred to as Strawn, Devonian, Montoya, Fusselman, and Ellenburger.
2) Marathon Thrust Belt – Thrusted Sheets Pennsylvanian through Devonian formation - locally referred to as Tesnus, Dimple, and Caballos.
3) Wolfcamp Trend – Pennsylvanian through Permian sediments eroded from the Val Verde Basin shelf and the Marathon Thrust Belt.

The combined future potential recoverable gas reserves from these trends in the Longfellow Ranch area could exceed 10 TCF.

Val Verde Basin Paleozoic Structures

The primary production in the Val Verde Basin is from Seismically identified structures producing from fracture enhanced cherts, limestones, and dolomites. Most of these fields are bounded by compressional reverse faults which place the reservoir in contact with rich shales of Woodford, Barnett, or Wolfcamp age. Most simple structures in the northerly portion of the Basin were discovered in the 1950's and 1960's.

Most of the prospect acreage lies on the margin of, or underneath overlying thrust sheets covering the southern portion of the Basin. Until recently, seismic imaging has been unable to image below these thrust sheets. The development of swath seismic recovery within the last 6 years has enabled much more accurate imaging of these deep structures.

These fields generally produce some CO2 in association with the hydrocarbons. Ordivician (Ellenburger) fields vary from 3%-97% hydrocarbon. Generally the hydrocarbon content of the overlying Siluro-Devonian formations is higher (0.5%-50%) and indicative of the gas content of the underlying Ordivician. Existing processing capacity of over 1 BCFG/Day exist in close proximity to the Longfellow Ranch. Pennsylvanian (Strawn-Atoka) fields generally do not contain significant CO2 and most have significant oil-condensate production.

Pecos County is the largest gas producing county in the Permian Basin. The majority of this production has been from fields producing in these formations. Adjoining the ranch are several fields which produce from Paleozic formations.

1) On the northwest side of the acreage is the Elsinore/Pikes Peak E. field. Production is from the Devonian-Montoya. Ellenburger production, while prolific (25,000-35,000 mcfg/day/well) has a high CO2 content. This field will ultimately produce approximately 425 BCF. Field size is approximately 10,000 acres at a subsurface depth of ±12,000'. The worlds largest CAOF gas well potential was in this field with an initial potential of over 4.3 BCFG/day.

2) On the northeast side of the acreage is the Grey Ranch, Grey Ranch West, and Downie Fields. Production is from Devonian Ellenburger. These fields may ultimately produce up to approximately 1.5 TCF. Field size is approximately 7,000 acres at a subsurface depth of ±12,000' to 21,000'. The average IP of these fields' wells is in excess of 100,000 mcf/day.

Two Grey Ranch equivalent prospects have already been mapped within the boundaries of Longfellow Ranch, others within the general area are probable. Assuming three new field discoveries were made within the Ranch Area, another 42 Paleozonic development wells could be brought on line. At an average of 26 BCF/well or more (net methane), 1.196 TCF of Paleozonic gas could be developed.

Marathon Thrust Belt

During the Pennsylvanian-Permian Ouachita collisional event shallow marine carbonates, clastics, and cherts were transported, were thrusted and came to rest over the older Paleozoic formations. The leading edge and thrust sheets of this movement is located throughout the majority of the acreage. Production from this intensely complex geology is generally from Pennsylvanian sandstones (Tesnus), limestones (Dimple), and Devonian chert (Caballos). Fracturing at the flextures of these thrust blocks enhances production.

Production to the west of the Ranch has variable CO2 content and it is believed that this may be related to some thrust sheets having breached the Allison Devonian feature. Production moving eastward to the Ranch has virtually no CO2. Individual fields may be acreally small due to faulting, but adjoin and continue over a large area with the general structure and multiple thrust sheets formed by several thrust belts that traverse the Ranch.

On and adjoining the acreage are several fields which produce from the Marathon Thrust Belt.

1) Pinon/Bitterweed/Rio Caballos Fields – These fields are located on the northwest portion of the acreage. Production varies from 3200′ to 7200′ from Tesnus, Dimple and Caballos. Current 2001 production is approximately 75,000 mcf from 50 wells. As of 2001 these wells have produced over 100 BCF with another 300 BCF predicted recoverable.
2) Thistle Field – This shallow oil field consisting of several fault blocks is located just northeast of the acreage. Production varies from 1800′ to 4000′. This field should ultimately produce approximately 4,500,000 bbl oil and 5 BCF from 1200 acres and 14 wells, many zones remain untested.

Development and new field prospects on the acreage are profound. Most of the thrust fields were discovered in the early 1970's to mid 1980's. After a brief flurry of trend activity this entire play was dormant until Riata started drilling in the forethrust portion of the Marathon Thrust Belt in 1992. Discoveries by Riata and Tom Brown, Inc. in 1993 and 1994 coupled with lower drilling costs and improved seismic interpretation led to a 100 well – 150,000 mcfg/day field development on trend east of the acreage. Evolution of stimulation technology has greatly enhanced production from these light reservoirs. Riata has been the most significant contributor to lower drilling costs and an equal contributor to stimulation improvement. In addition to additional offset wells in the Pinon/Bitterweed/Rio Caballos fields, there are close to 100 seismic features above 8000′ on the acreage. As limited well control exists, some of these features may be of a different and non-productive formation. The prolific production of the existing fields merits the drilling risk of these limited depth prospects. Several 1980's vintage wells on the east side of the acreage had tests up to 2500 mcfg/day and 80 bbl oil/day which were not developed or produced. Assuming 160 acre spacing for new Caballos wells and 40 acre spacing for new Tesnus/Dimple wells, another 7.3 TCF of Methane development is possible.

Wolfcamp Trend

In late Pennsylvanian through Permian time, the southern shelf of the Val Verde Basin and the Thrusted Marathon structures were eroded and deposited in deltaic, stream and turbidite structures. This trend of deposition is along the northern edge of the acreage. Up to several

thousand feet of sandstone and conglomerate are deposited, overlain with shale, cut, and redeposited northward into the Basin. Most of these deposits have a structural-stratigraphic component of trapping, produce high BTU gas with condensate, and would be classified as tight reservoirs with small pore throat size, cementation, and interstitial clays.

In 1991 Riata acquired and began development of a 1975 1 well field which had produced less than 1 BCF over 16 years. By utilizing modern stimulation methods this field now has over 100 wells and is expected to recover at least 250 BCF. The sale of the Pakenham Field by Riata and Partners to Chevron in 1994 generated the capital to acquire the Longfellow Ranch and associated acreage.

To the northwest of the acreage is the GMW and La Escalara Wolfcamp fields. In 1996 Riata drilled the Longfellow XX-2-1 to test a 1600' section of deeper Wolfcamp. Only the uppermost sands were productive. Utilizing our data Chevron has drilled two productive wells approximately 2 miles northwest of our well. Two to six productive structures should be drillable on our acreage. The cause of the lower sands non-productiveness is low pressured gradient. Approximately 20 miles east, our Cerf 9-1 well had a normal Wolfcamp pressure gradient at 6500'. We had not previously encountered underpressured Wolfcamp reservoirs and believe this may somehow be related to the Sierra Madera impact structure just north of the GMW-La Escalera Field. If so, normal gradient reservoirs may be encountered east of this field. In the absence of well control, exploration for Wolfcamp fields consists of defining "valley" where those sands might have been deposited as the sands themselves are indiscernible on seismic. Three large "valleys", which are of similar size as the Pakenham Field we developed, are present on the acreage. Over the northeast portion of the ranch area, another lower or "Subthrust" Wolfcamp play has been identified. The Wolfcamp here is characterized by enormously thick piles of normally to overpressured tight sand. One well in particular, north of the ranch tested over 53 mmcfgpd from the Wolfcamp at over 12,000 pounds of bottom hole pressure. These sands cover huge areas and could contain truly huge reserves.

On 160 acre spacing, a possible 600 new wells could be drilled at an average 4 BCF/well. This would total 2.4 TCF of gas reserves.