



EFP's Pearsall Proposal

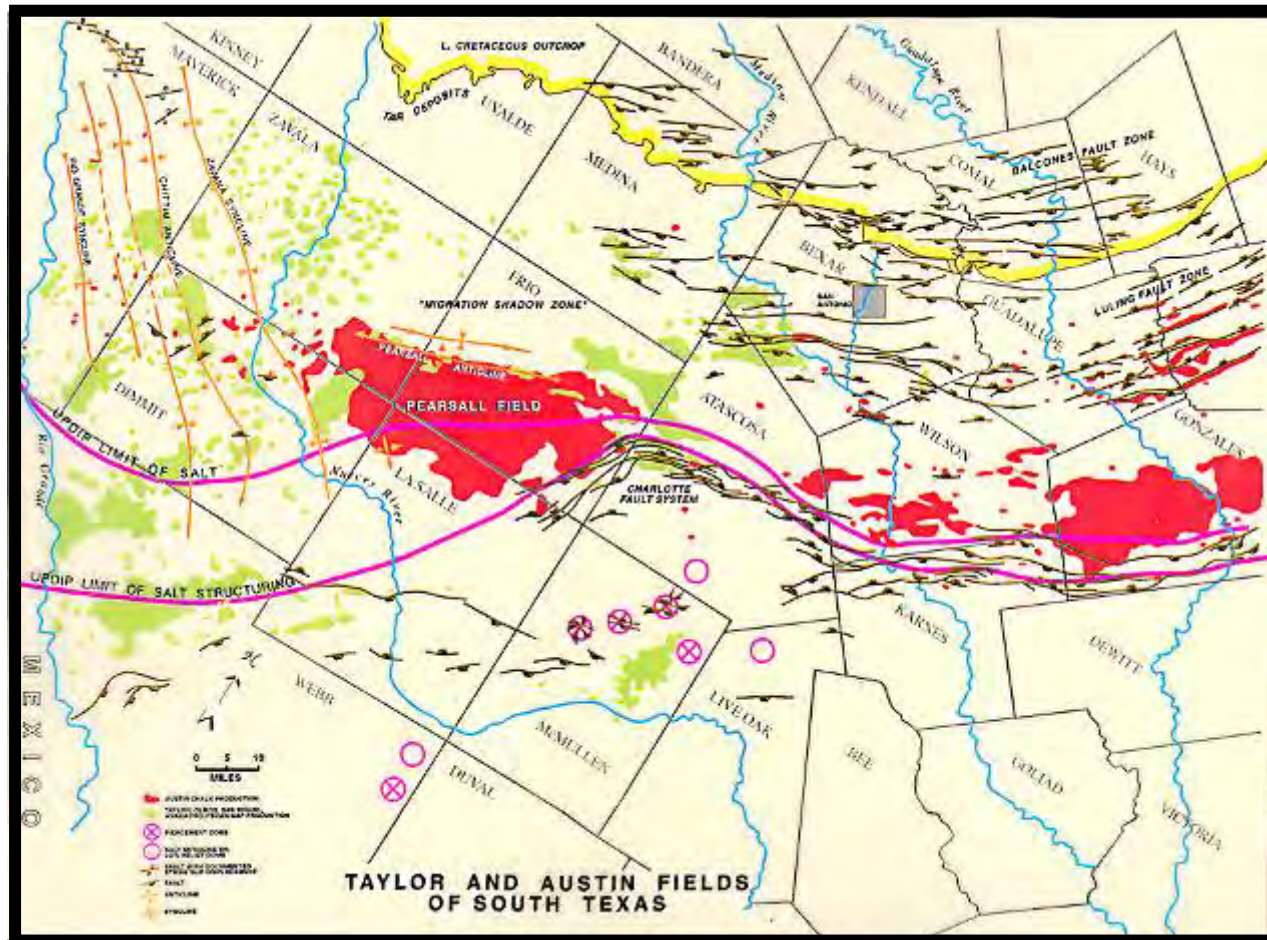


Index Map of Pearsall Field

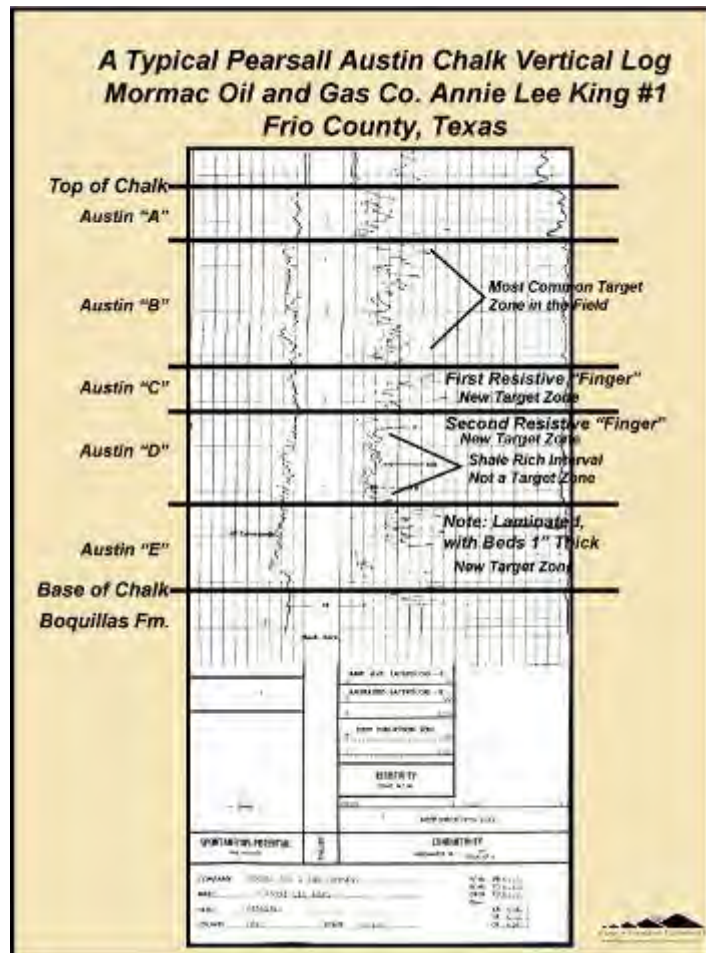
General Location Map



Upper Cretaceous Fields



Type Log for the Field



- The Austin Chalk is Divided into Austin "A" through "E" zones.
- The "B" zones is the most favored target zone.
- The lower chalk is more laminated and oil saturated.

The Stratigraphic Section

Generalized Stratigraphic Section for the Gulf Coast Cretaceous

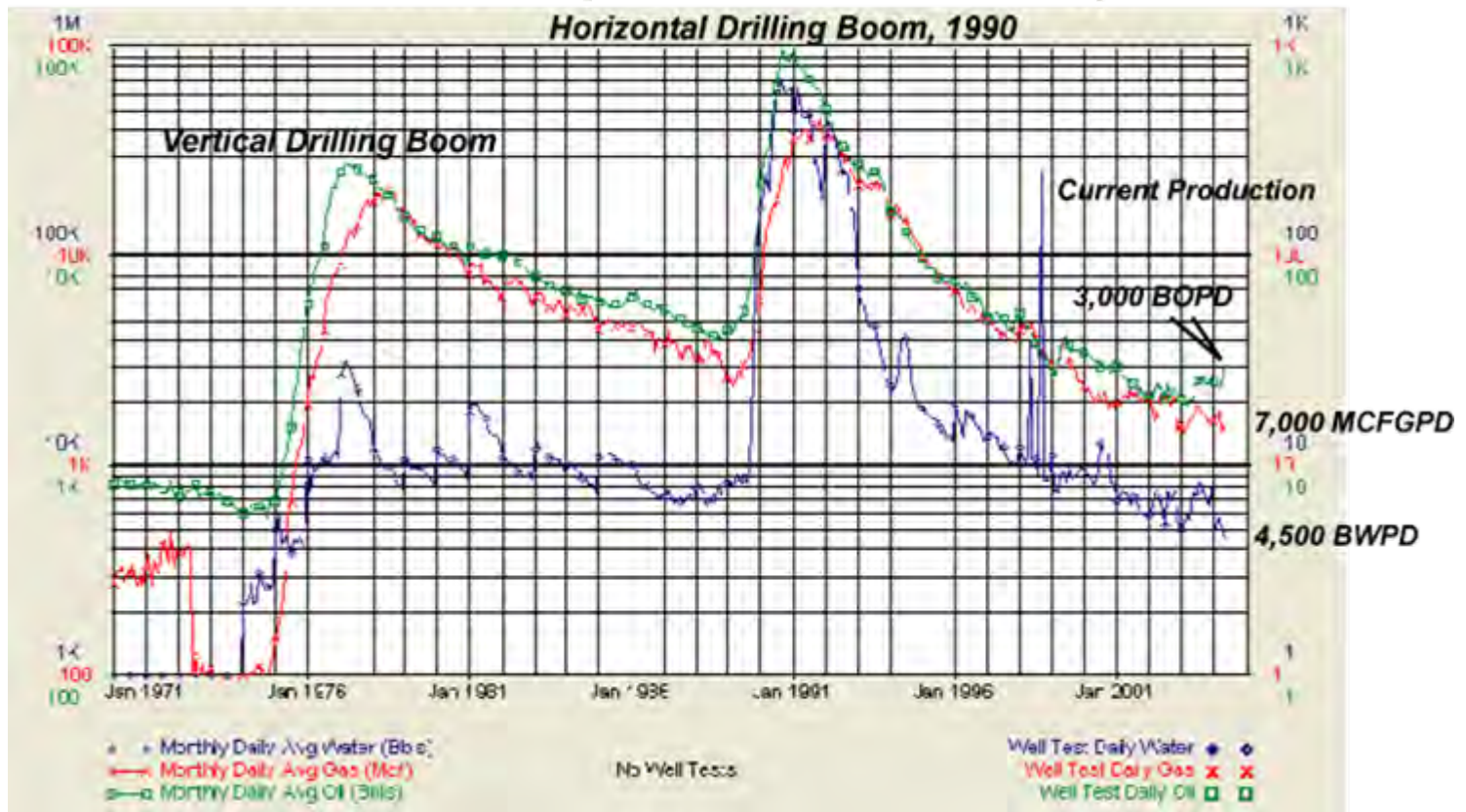
		Texas Stage	Gulf Coast Grp. or Fm.	European Stages
C R E T A C E O U S	U P P E R	Navarro	Navarro	Maestrichtian
		Taylor	Taylor	Campanian
		Austin	Austin	Santonian
		Eagle Ford	Eagle Ford	Coniacian
		Woodbine	Woodbine	Turonian
	L O W E R	Washita	Buda Del Rio Shale Georgetown / Salmon Peak	Cenomanian
		Fredericksburg	Edwards	Albian
		Trinity	Glen Rose	
		Nuevo Leon		Aptian
		Durango	Sligo Hosston	Neocomian

After Brian E. Lock, 1984, GCAGS Vol XXXIV

Pearsall Field's Production History

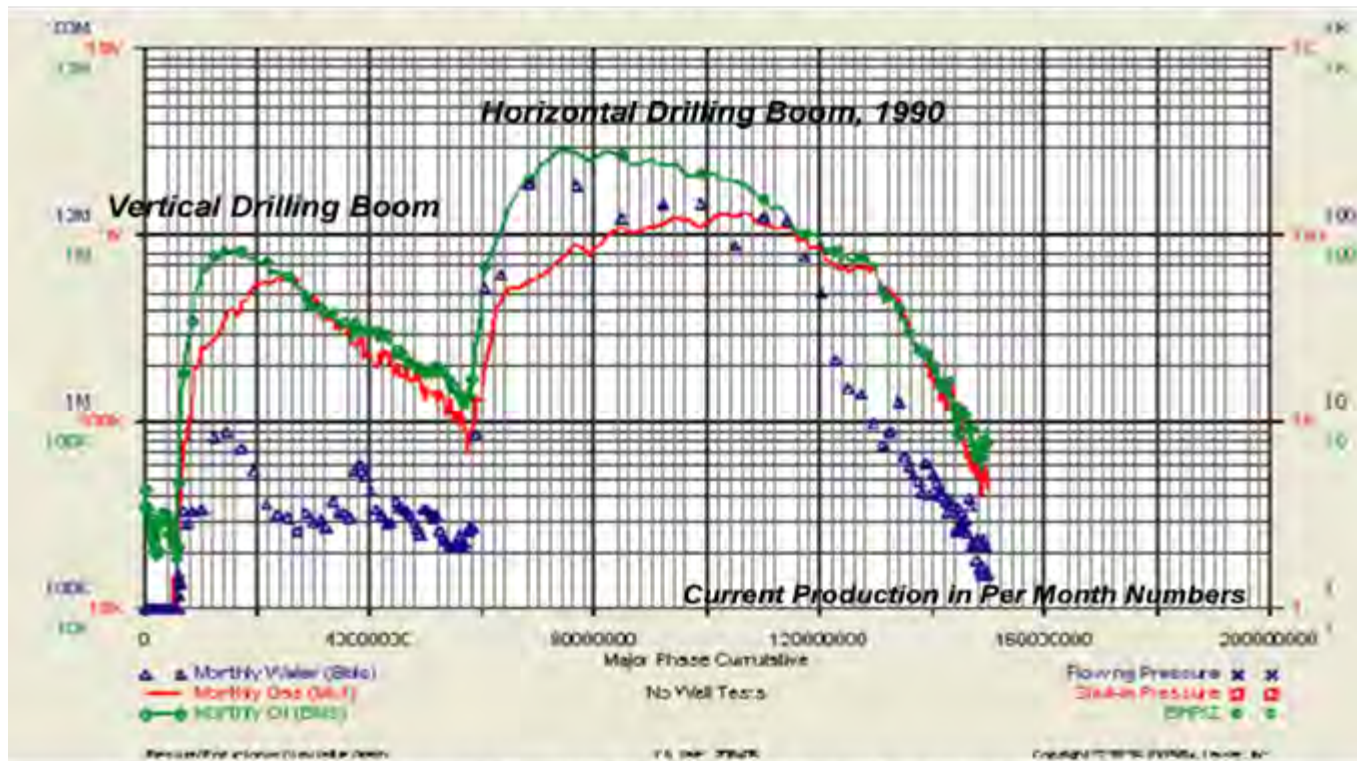
A Tale of Two "Booms"

The Production History of Pearsall Field Since 1970
Rate - Time Plot (BOPD, MCFGPD, BWPD)



But There are Difference in the Declines of the Two “Booms”

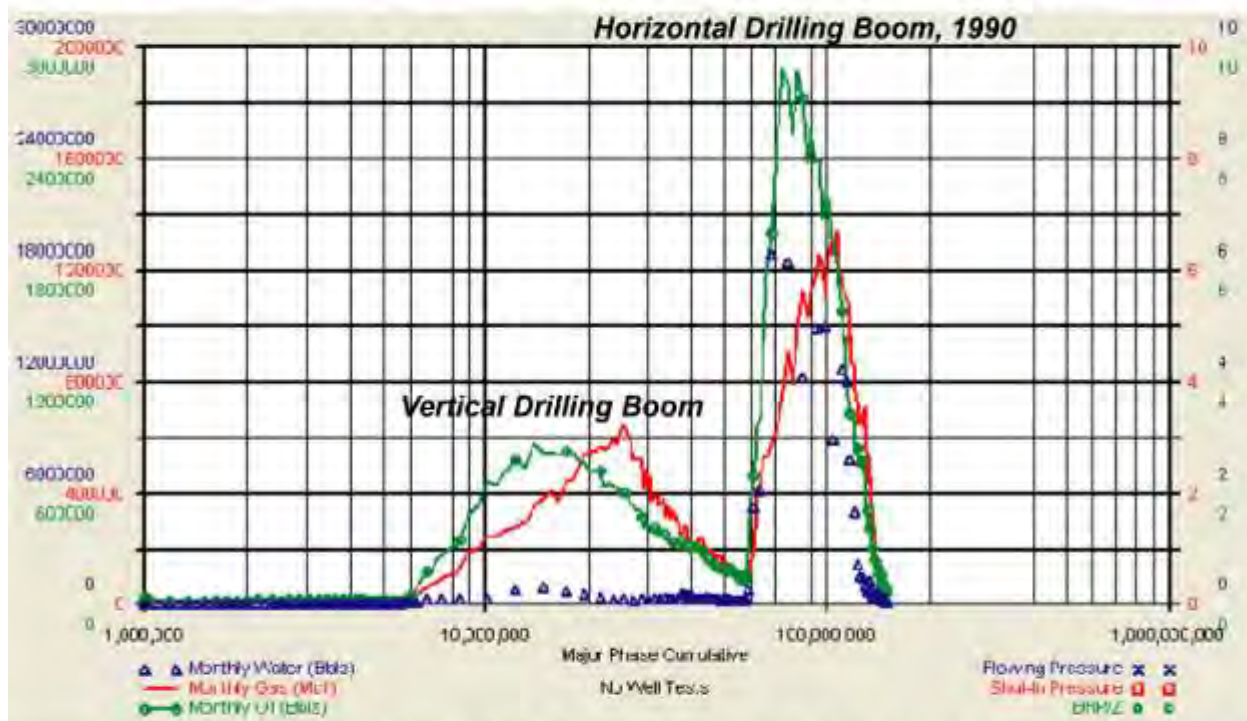
*The Production History of Pearsall Field Since 1970
Rate - CUM Semi-Log Plot (BOPM, MCFGPM, BWPM)*



Note: The horizontal drilling boom is missing the “tail” of “matrix” that the is seen during the vertical drilling boom. This observation must have an explanation.

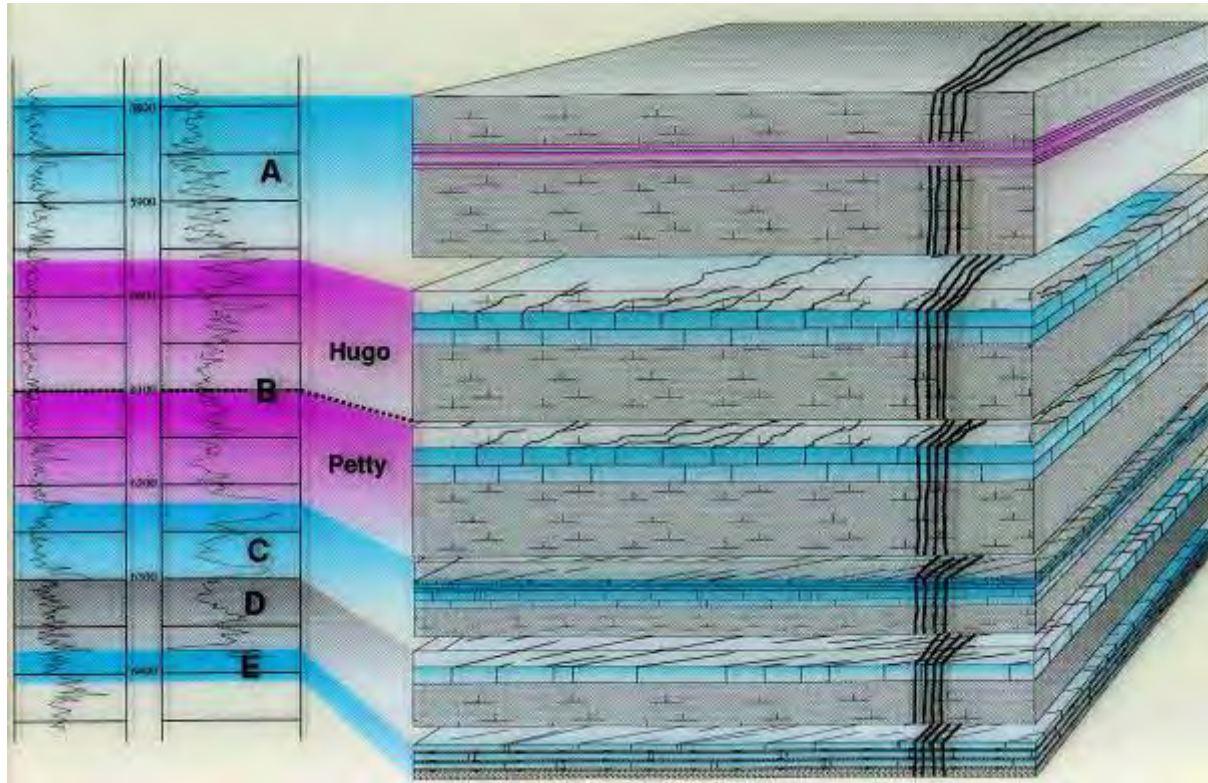
A Linear-Log Plot Showing the Trends Horizontal Wells” are Missing a “Tail”

**The Production History of Pearsall Field Since 1970
Rate - CUM Log-Log Plot (BOPM, MCFGPM, BWPM)**



Note: On the log-log plot, the lack of “matrix” support is even more obvious. The “tail” seen during the vertical boom makes up half of the recovered volumes of all vertical wells. If the pattern established during the vertical boom is predictive, then 90 MMBO remain in the field.

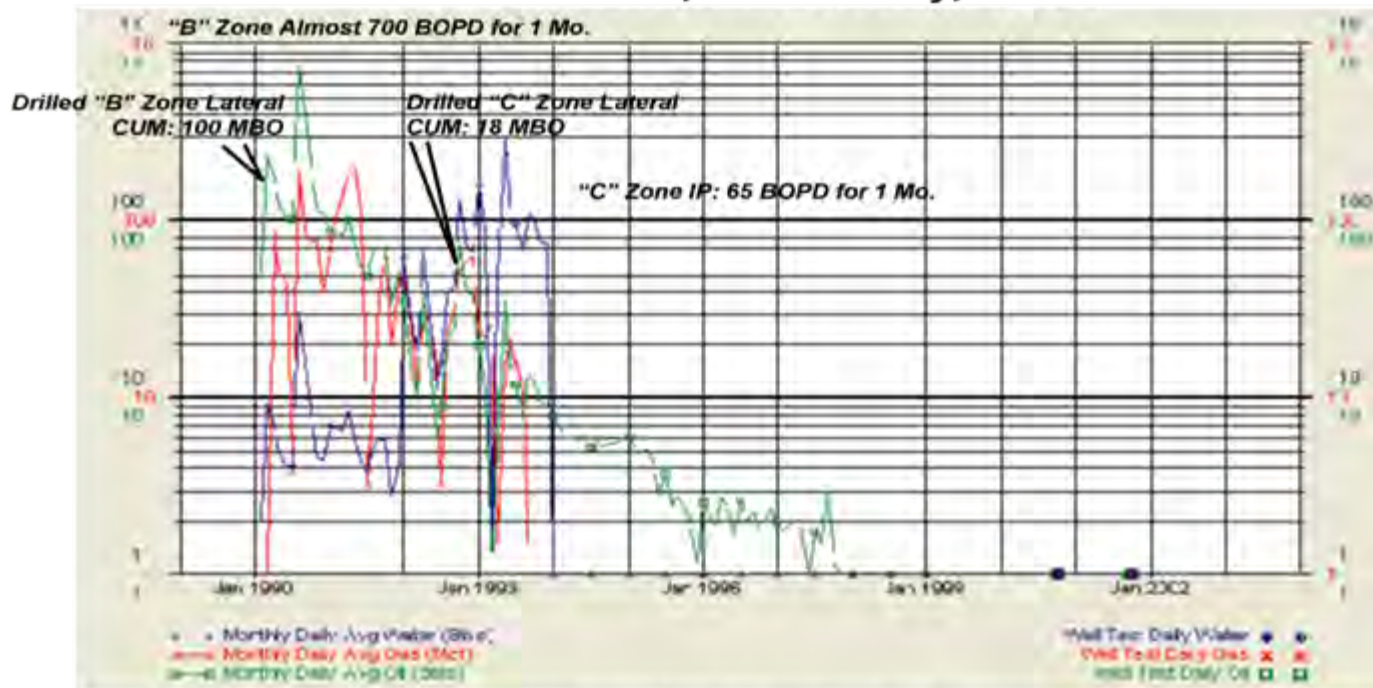
UPRC Model for Pearsall Chalk



- Many small bed confined fractures and occasional large through-going fractures

Decline of Individuals Wells Echo the Field's History

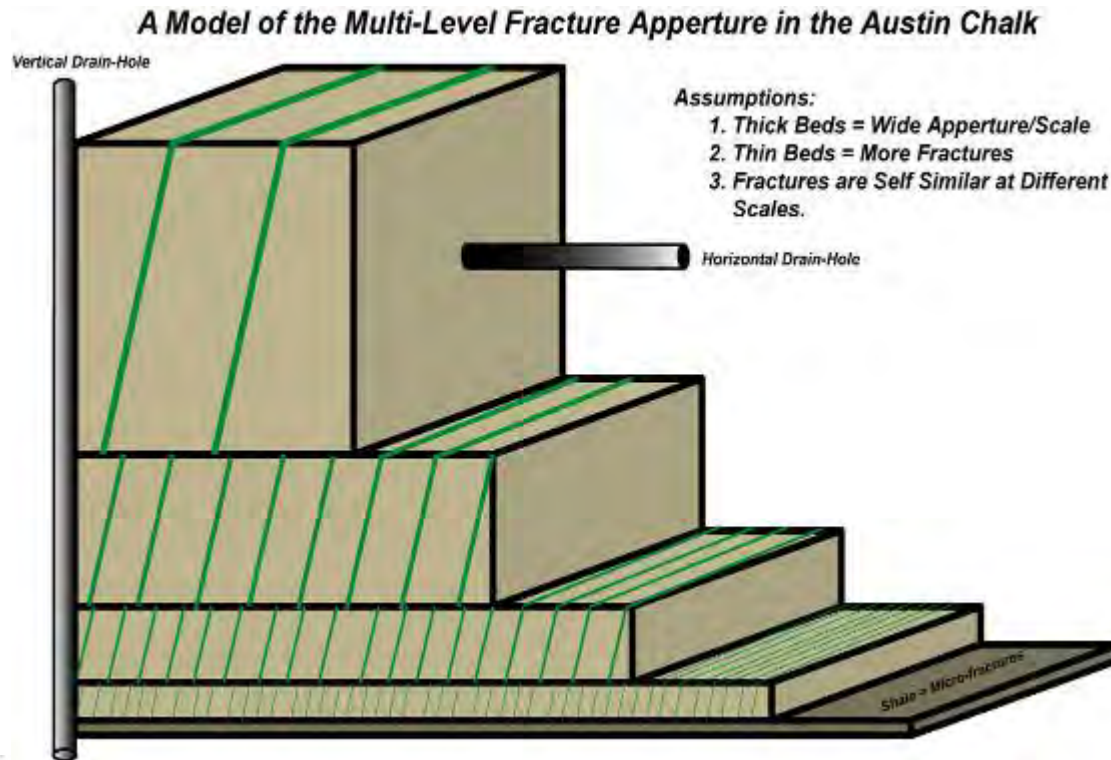
A "B" Zone Well, With a "C" Zone Re-Entry UPRC (Cenzina Petroleum) Walls No. 1 RE Pearsall Field, Frio County, Texas



Note: The "B" lateral yielded over 100 MBO in in about 3 years, while the "C" lateral yielded about 18 MBO over a period of 5 1/2 years. This is because the "B" zone is thicker, and has larger fractures, but many reserves remain untapped in the thin lower beds of the Austin Chalk "D" and "E" zones. This also explains the hyperbolic declines the vertical wells that perforate the entire Austin Chalk section.

A Hypothesis Explains The Observed Facts

- The horizontals are mostly “B” zone wells with large fractures and little matrix or micro-fracture support.



Supporting Evidence

- Core shows that there is increased saturation with depth
- Core shows increased smaller scale fractures with depth
- Vertical Wells tend to perforate the whole chalk and have a longer life
- Horizontals tend to target the “B” zone and few have a long life



Core Evidence for Matrix

*Exxon Chinn & Ashbey No. 3 Core Photos
Taken Under 12X Magnification*

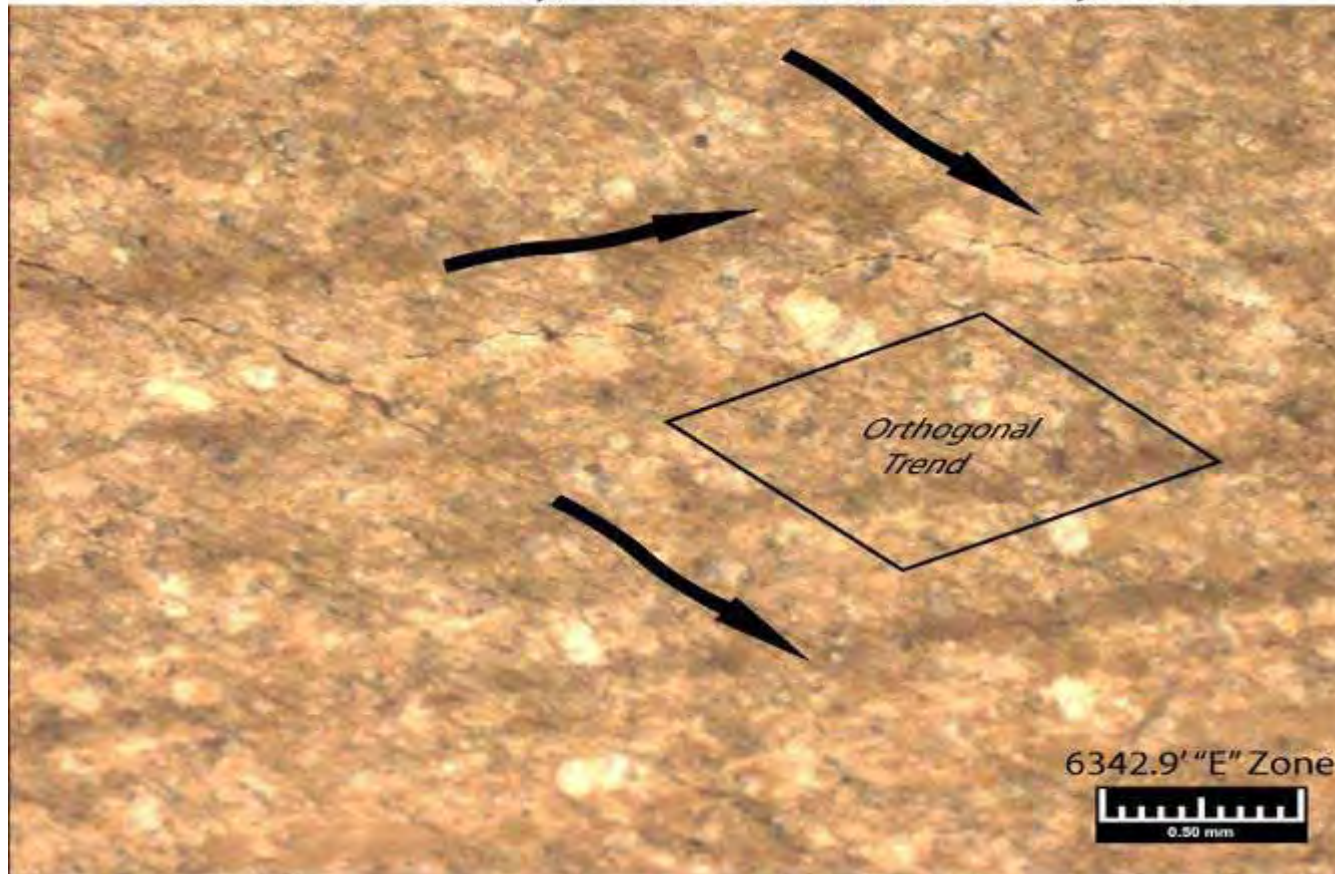


Darker Color (Increased Oil Saturation) with Depth



Core Evidence of Micro-Fractures

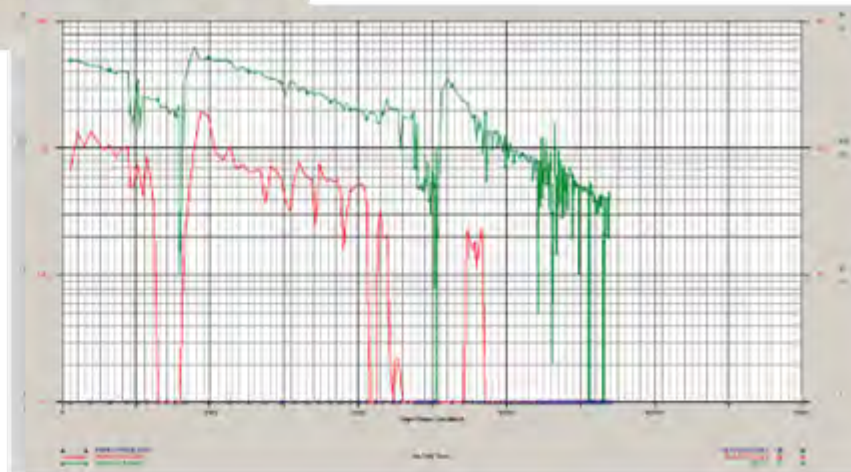
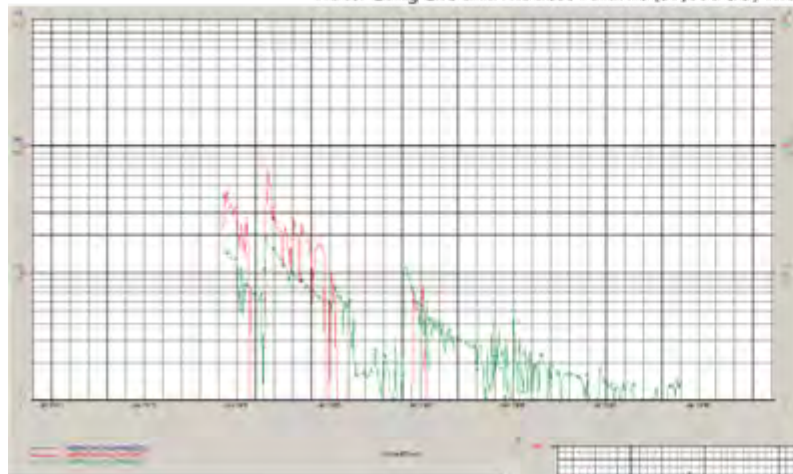
Exxon Chinn & Ashbey, Pearsall Field, Zavala County, Texas



A Decline Curve for the Eagle Ford Shale & Boquillas Flagstone Zones

An Example Eagleford Producer in South Texas
Cage Ranch 45-1 Well

Note: Long Life and Modest Volume (37,000 BO) with Two Successful Stimulations



Conclusions

- There could be large reserves remaining in the field – EFP estimates 90 million barrels
- Depletion of the drive mechanism is a risk
- There needs to be an effort to try new techniques for additional recovery enhancement
- Solution: use additional laterals through the lower, using multiple hydraulic stimulations
- We must reconstruct where the old wellbore was drilled by using horizontal navigation software, and then apply new fracturing techniques new laterals.