



ZaZa Energy Corporation

Advanced Reservoir Characterization and Proof-of-Concept Drilling in
the Eagle Ford and Eaglebine Shales

Kevin J. Schepel
EVP Exploration & Production

September 2013



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ZaZa Energy – Company Build-up

Hess Joint Venture

- ❑ Strategic shift in operational outlook on behalf of both Companies led to the dissolution of the joint venture with Hess, whereby ZaZa focused primarily on Texas plays
- ❑ As a result, ZaZa received ~60,500 net acres in the Eagle Ford area and \$84 million in cash, the right to receive a percentage of the net sales proceeds if Hess divests the Cotulla Prospect, as well as a 5% overriding royalty interest in the Paris Basin

Management Build Up

- ❑ Subsequent to ZaZa's dissolution with Hess, ZaZa executives hand-picked a management team comprised of individuals with distinguished backgrounds in top-tier geology, engineering, land management, legal, and finance roles who are familiar with the operational and competitive environment

Eaglebine Evaluation

- ❑ Technical evaluation of the juncture between the organic- and carbonate-rich Eagle Ford group and the silica-rich Woodbine plays provided an operational thesis to make the Eaglebine an area of primary focus

First Mover Advantage

- ❑ Amassed and maintained key acreage in the play with the vision to find a partner with significant capital resources to fully develop acreage on an aggressive timeline
- ❑ ZaZa maintains one of the most consolidated acreage positions in the Eaglebine area

Eagle Ford East / Eaglebine Development

- ❑ Signed Joint Exploration and Development Agreement to further develop Eastern Eagle Ford/Eaglebine acreage.

Portfolio Rationalization

- ❑ Corporate non-op restructure and strategic divestment of South Texas Eagle Ford and Edward assets.
- ❑ Technical shift to evaluation and assessment of new emerging plays and focused positioning for future growth

ZaZa Energy – Leadership Transformation

Team has over 25 years average experience including with majors and large independents

ZaZa's team members have participated in the drilling and completion of 7,500+ horizontal wells over their careers



Todd Brooks
(Founder, Executive Director, President & CEO)

- Founder of Neuhaus Investments, LLC, a company making strategic energy investments across multiple geographic regions
- Production Analyst for L. J. Melody & Co. investment bank, and landman for OGM Land, both headquartered in Houston , TX
- B.A. in Economics from Vanderbilt University; J.D. from South Texas College of Law

Ian Fay
(CFO)

- Founding Partner at Odin Advisors LLC
- Served as Head of the Energy & Natural Resources Group | Americas at BNP Paribas
- Worked as Managing Director for RBC Capital Markets and Director of M&A for UBS Investment Bank
- Graduate of the University of North Carolina at Chapel Hill and Morehead-Cain scholar

Kevin Schepel
(EVP Exploration and Production)

- Executive Vice President of Exploration and Production since June 2010
- Served as Vice President of Worldwide Exploitation for Pioneer Natural Resources, Chief Petrophysicist for BHP Petroleum and 15 years as an advanced Geoscientist at Exxon
- B.S. from Michigan State University; Licensed by the Texas Board of Professional Geoscientists

Thomas Bowman
(EVP Evaluation, Geology and Geophysics)

- Served in various roles at Aspect Abundant Shale, Bass Enterprises, Fina Oil and Chemical and Tenneco Oil Co.
- Industry-recognized specialist in identification of resource plays and the utilization of geophysical advancements; involved in the completion of over 1,000 horizontal resource wells across a majority of US shale plays
- B.S. from Montana College of Mineral Science and Technology; Licensed by the Texas Board of Professional Geoscientists

Stewart Delcambre
(EVP Land)

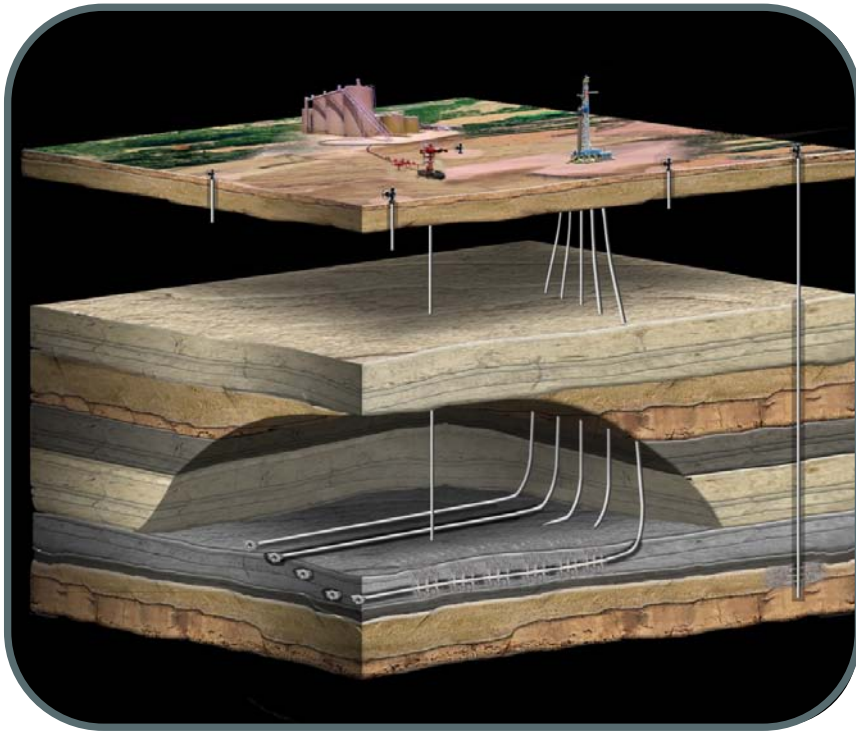
- Has served as EVP of Land for ZaZa since July 2012
- Has been involved in the acquisition, management, exploration and divestiture of over 1,000,000 acres over his career
- B.S. from the University of Southwestern Louisiana; served in the military for eight years



ZaZa Energy – Technology Evaluation

Setting Trends in Technology

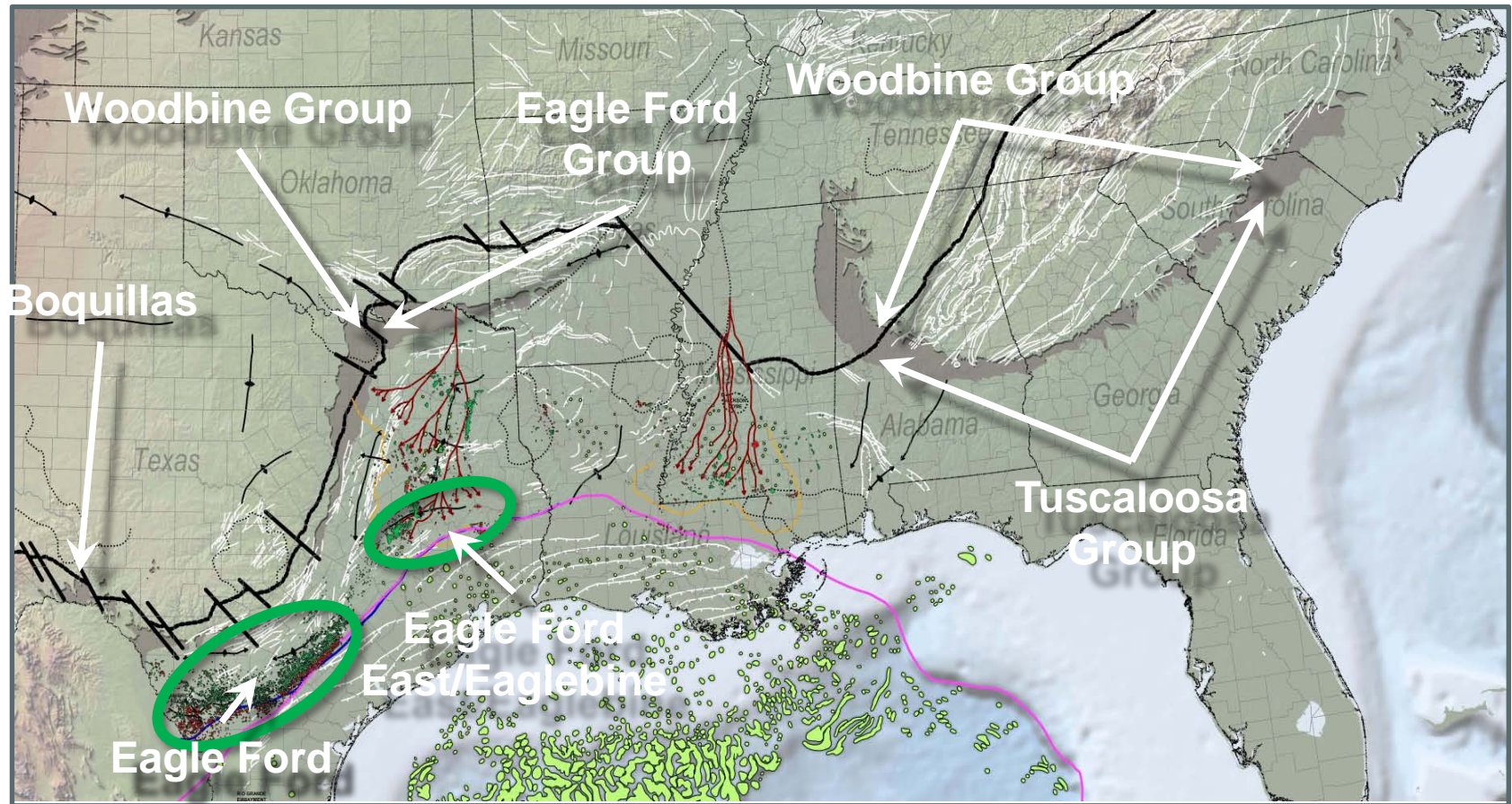
- ❑ ZaZa drilled and completed 28 proof-of-concept well from 2011-2012
- ❑ Cut and analyzed over 2000' of conventional core
- ❑ Recovered over 800 rotary sidewall cores
- ❑ Tested a number of its new logging tool technologies for advanced evaluation in unconventional resource plays
- ❑ Implemented first ZIPPER frac by alternating two wells' stimulations off the same pad
- ❑ Used micro-seismic technology to monitor and improve our completions
- ❑ Developing future technology for enhanced micro-seismic and production monitoring



“We focused on drilling proof of concept wells armed with conventional core, some of the most advanced logging suites available, and custom petrophysics designed through detailed integration of the physical rock and fluid data.”

The American Oil & Gas Reporter - March 2013

Upper Cretaceous Shales – Transition of Play Types



Lateral equivalents of upper Cretaceous shale across the southern Gulf Coast of the United States; in outcrop and in sub-surface. Local names include the Lewisville, Dexter, Maness, Pepper Shales, and Raritan *

Eagle Ford Trend at Night

Key Points

- The shale play trends across Texas from the Mexican border up into East Texas, roughly 50 miles wide and 400 miles long with an average thickness of 250 feet.
- It is Cretaceous in age resting between the Austin Chalk and the Buda Lime at a depth of approximately 4,000 to 12,000 feet. The down-dip limits are currently defined by the Sligo shelf edge
- There are 5367 permits 4,045 producing oil wells and 1,883 gas wells as of August 5, 2012
- Currently producing over **617,884 Bopd** (June 2013)



This image of the United States of America at night is a composite assembled from data acquired by the Suomi NPP satellite in April and October 2012. The image was made possible by the new satellite's "day-night band" of the Visible Infrared Imaging Radiometer Suite (VIIRS), which detects light in a range of wavelengths from green to near-infrared and uses filtering techniques to observe dim signals such as city lights, gas flares, auroras, wildfires, and reflected moonlight.

- **Credit:** NASA Earth Observatory image by Robert Simmon, using Suomi NPP VIIRS data provided courtesy of Chris Elvidge (NOAA National Geophysical Data Center). Suomi NPP is the result of a partnership between NASA, NOAA, and the Department of Defense

Eagle Ford Permits – Core and Eastern Expansion Area

Finding the Next Industry Growth Area...

Eagle Ford East/Eaglebine

Eastern Extension (Eaglebine)

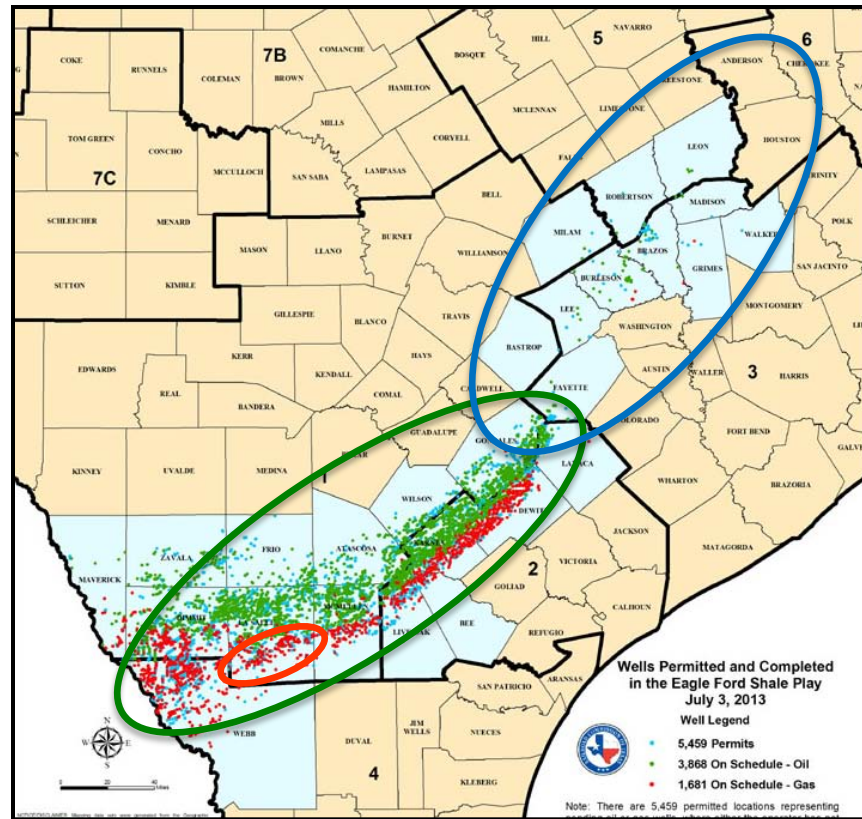
Austin County	Milam County
Brazos County	Polk County
Burleson County	San Jacinto County
Grimes County	Trinity County
Lee County	Walker County
Leon County	Washington County
Madison County	

Main Focus Areas (Eagle Ford)

Atascosa County	LaSalle County
Bee County	Lavaca County
Dewitt County	Live Oak County
Dimmitt County	Maverick County
Frio County	McMullen County
Fayette County	Webb County
Gonzales County	Wilson County
Karnes County	Zavala County

Discovery Area (Eagle Ford)

LaSalle County
McMullen County

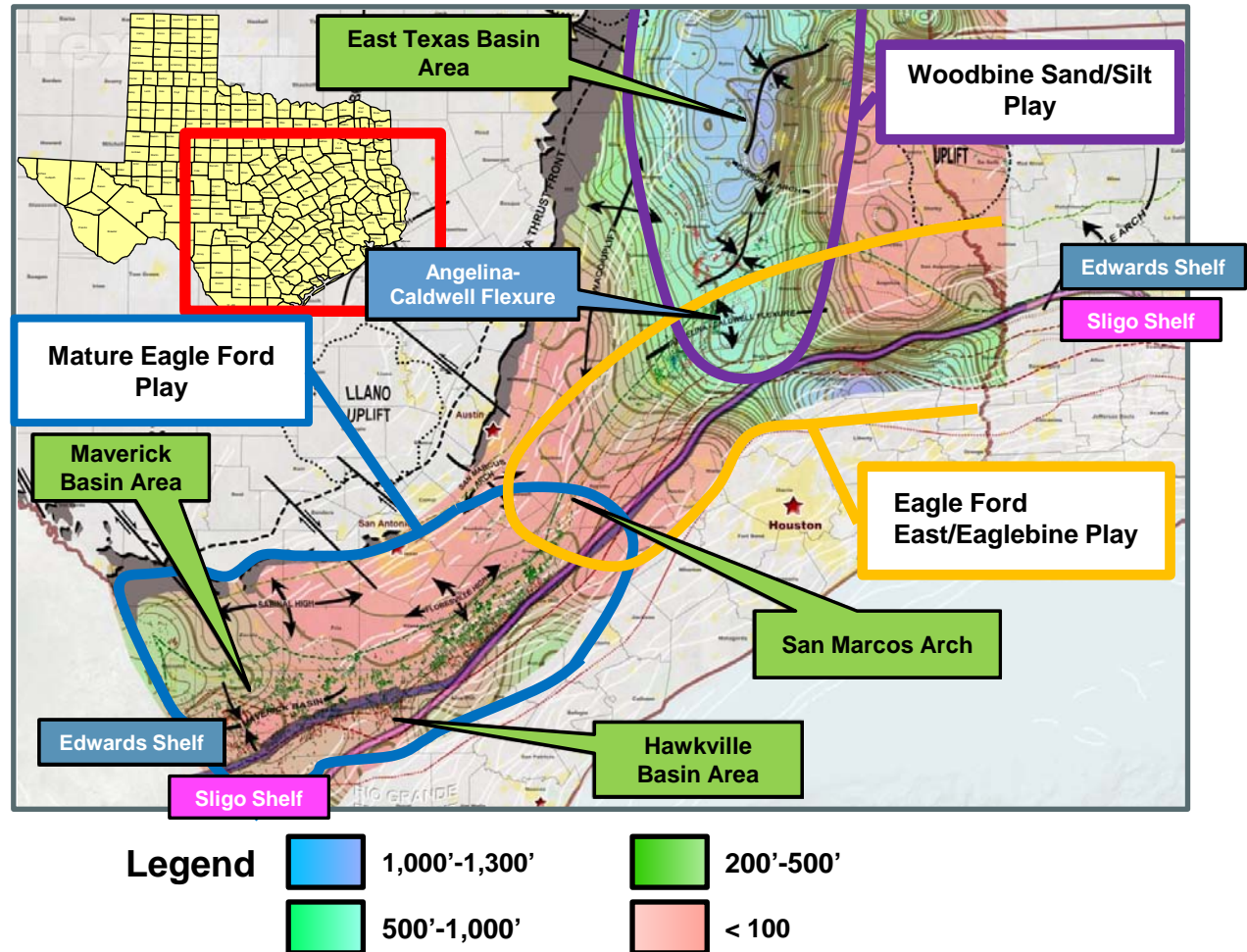


Eagle Ford/Eaglebine Trend

Key Points

- The Eagle Ford East/Eaglebine area of interest is located between the Angelina-Caldwell on the north, the Edwards and Sligo shelf edges to the south, the San Marcos Arch on the west and the Sabine uplift on the east
- The section contains the down-dip toe-slope portion of the Harris delta system (Woodbine Sand/Silt Play) and a lower high organic rich shale interval interlaced with silica-rich sands and silts (Eagle Ford Laminate Play)
- Gross thickness for the Eaglebine section exceeds 1,000'
- Eaglebine isopach is defined as the section from the Base of Austin Chalk to the top of the lower Cretaceous

Isopach – Base Austin Chalk to Top of Lower Cretaceous

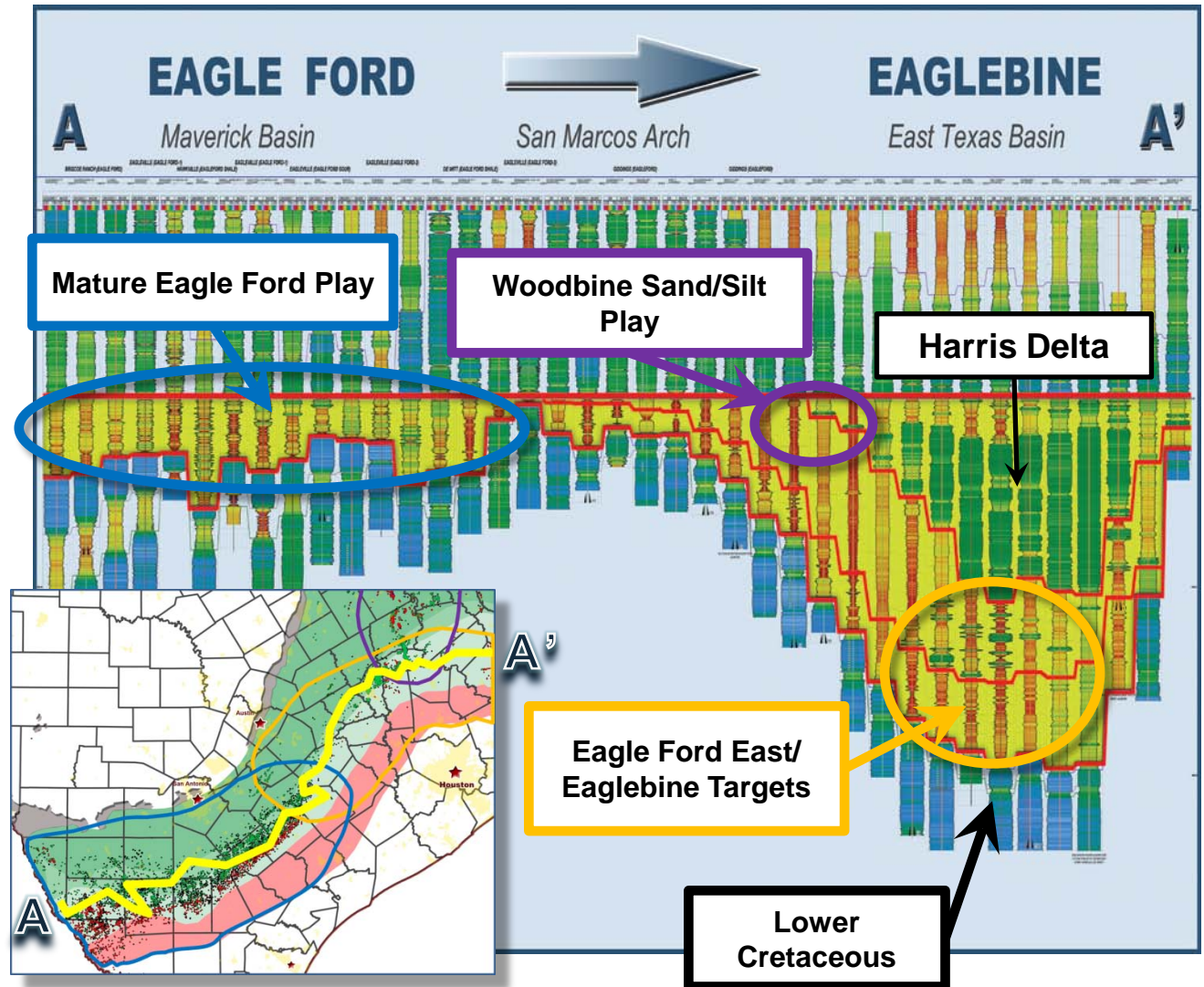


Eagle Ford and Eaglebine Areas Offer Multiple Stacked Targets

Eagle Ford East / Eaglebine Area

- Woodbine sand/silt horizontal play kicked off activity in the Eaglebine in 2009
- Lower Eaglebine target is a ~250' thick "hot" shale across ZaZa's leasehold and has recently become a main target
 - Analogous to mature Eagle Ford area
- Upper Eaglebine target is ~250' thick shale/sand/silt across ZaZa's leasehold and is between the Harris Delta sand and Lower Eaglebine
 - Has some similarity to the Woodbine sand/silt play
- Potential upside from Lower Cretaceous section
 - Kiamichi and Paluxy are "hot" shale targets across leasehold
 - Additional targets include Buda/Georgetown, Edwards, and Glen Rose

Regional Cross Section (Flattened on Base of Austin Chalk)



Proof-of-Concept Drilling - Measuring the Value of Information

Proof-Of-Concept Drilling

- It is not all about getting the best well right off the bat.
- Design a well to get producible hydrocarbons and to get the technical information you need to access commerciality.
- The first wells are important to prove up the play and drive future expansion and development.

Location and play area

Play fairway, cum, production upside potential, extension area

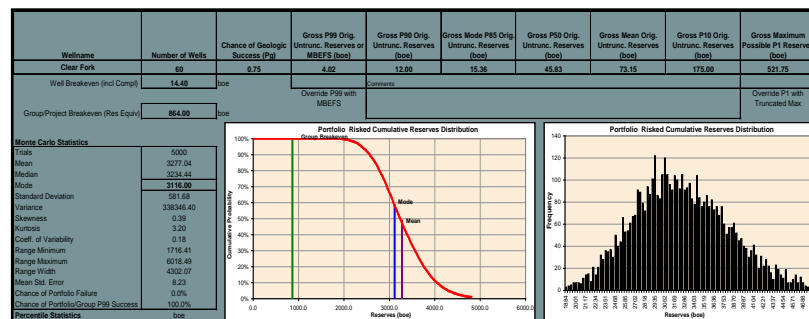
Target zones

Play concept

Best practices

Scoping Criteria

Well data, physical rock properties, geochem, maturity, reserves, productivity, scale, timing, impact, drilling costs, competition, entry strategy, and partnerships and all keys to success



Mud Logging Program

In addition to standard hotwire, chromatograph, and sample description services...

Vertical Well

Collect Isotube gas samples as follows:

- Sample every 100' from surface to TD
- Sample every 50' if good gas shows are encountered
- Sample every 10' through core interval

Collect cuttings in Isojars as follows"

- Sample every 100' from surface to TD
- Sample every 50' if good gas shows are encountered

Cuttings sampling and description

- Collect 3 sets of dried and 1 wet cuttings as follows
 - Surface to top Austin Chalk – 50' interval
 - Top Austin Chalk to well TD – 10' interval

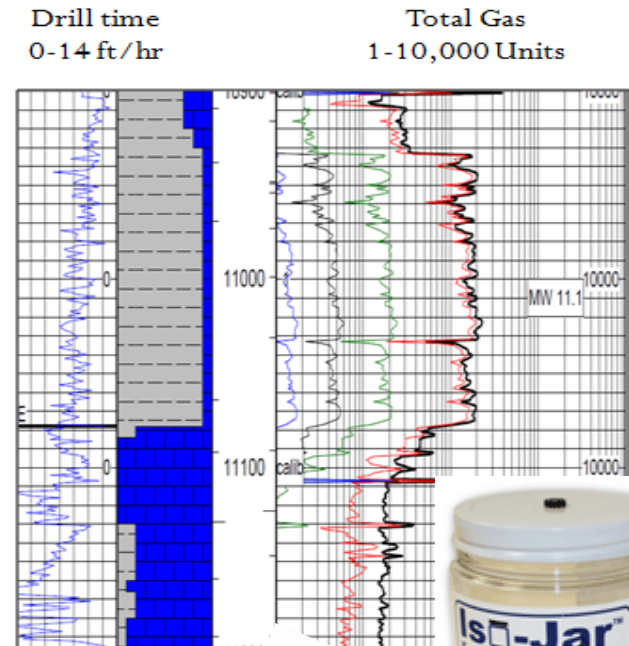
Horizontal Well

Collect Isotube gas sample as follows:

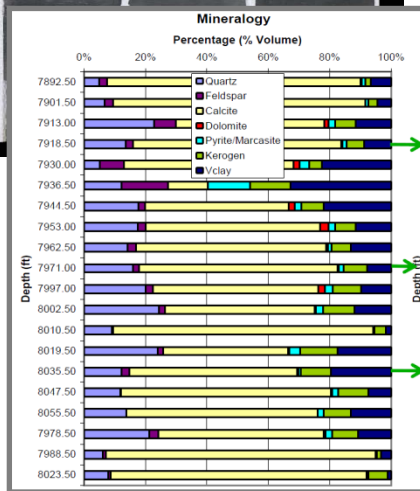
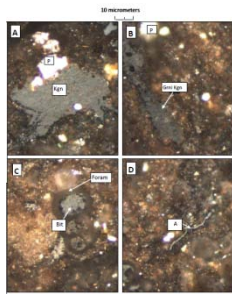
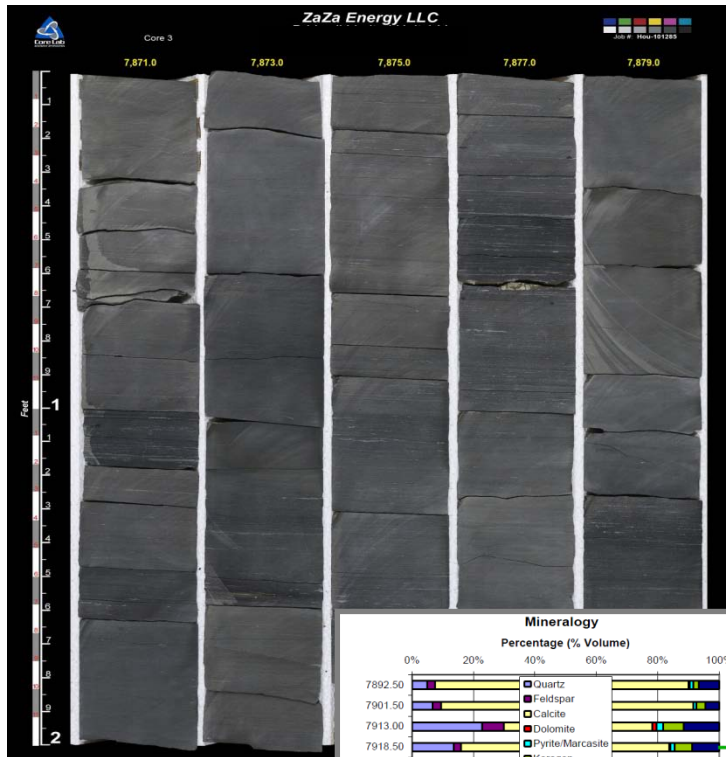
- 500' interval for entire lateral while in Eagle Ford

Collect cuttings in Isojars as follows:

- 500' interval entire lateral while in Eagle Ford



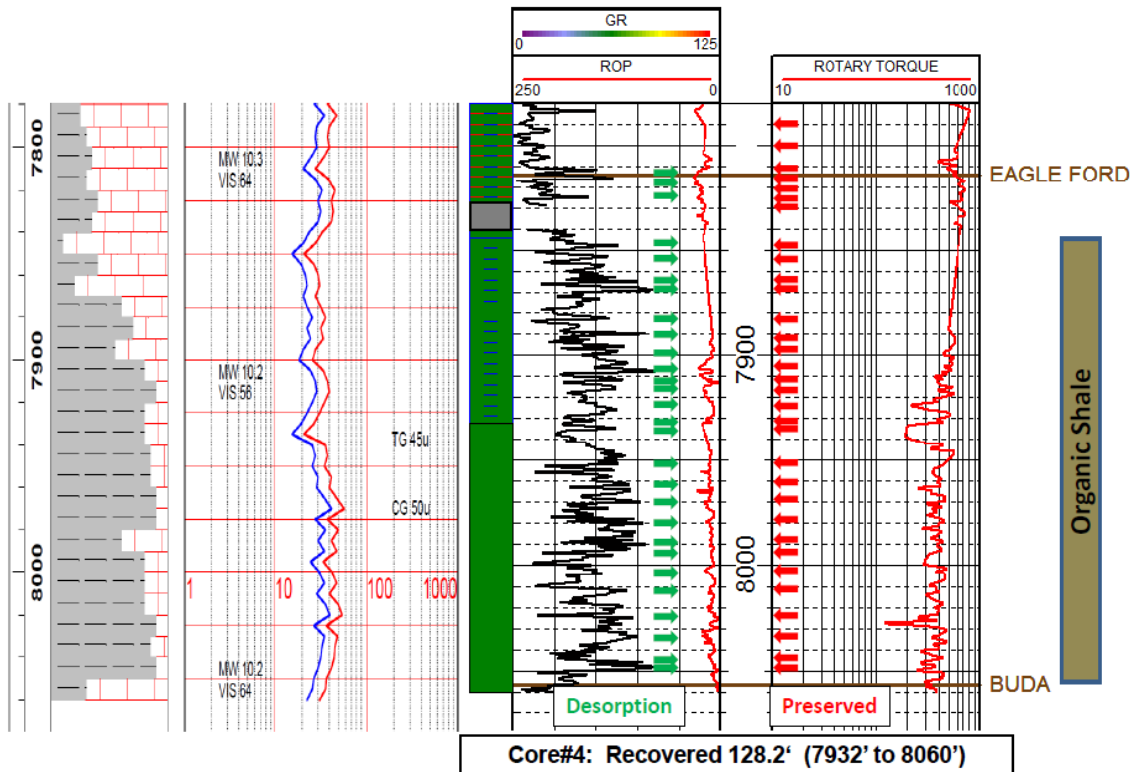
Monitor Well Coring Program



- Acquire 4" conventional core in Eagle Ford
- Target Approximately 400-480' of core
 - Coring point picked on location
 - Start at the base of the Austin Chalk (20')
 - Core entire Eagle Ford section
 - Core top 20' of the Buda
- Evacuate, Scribe, Orient and Spectral GR core
- Core Labs will handle all on-site core operations
 - Gas Desorption
 - Preserved Plugs (Houston)
 - All core contributed to Core Labs Eagle Ford Study



Conventional Core

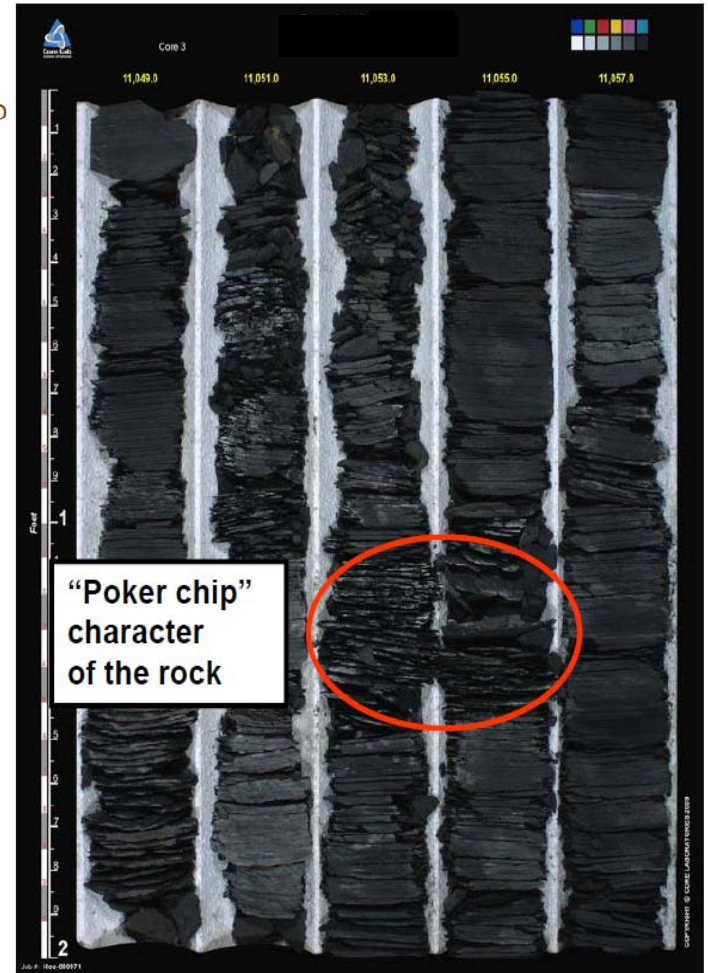


Core#4: Recovered 128.2' (7932' to 8060')

- Core #1 (7590-7717) – Recovered 127'
- Preserved: 7625,7660,7683,7705
- Core #2 (7717-7844) – Recovered 112.4'
- Preserved: 7720,7740,7760,7780,7790,7800,7811,7815,7820,7824,7729
- Desorption: 7812,7816,7825
- Core #3 (7844-78932.2) – Recovered 91.2'
- Preserved: 7849,7854,7864,7868,7882,7891,7998,7907,7911,7917,7925,7931
- Desorption: 7848,7853,7865,7869,7883,7890,7899,7908,7912,7916,7926,7932
- Core #4 (7932-8060) – Recovered 128.2'
- Preserved: 7934,7951,7961,7969,7979,7989,7994,8003,8011,8024,8033,8045,8048
- Desorption: 7935,7952,7962,7970,7980,7990,7995,8004,8012,8025,8034,8046,8049



Eagle Ford – Buda Contact



Formation Drilling Program

Stratigraphic Column East Texas Basin



ERA	SYSTEM	SERIES	STAGE	GROUP	FORMATION	
CENO-ZOIC	TERTIARY	EOCENE		Claiborne	Yegua	
		PALEOCENE		Wilcox	Wilcox	
				Midway	Midway	
CRETACEOUS		GULFIAN (Upper Cretaceous)	SENONIAN	Navarro	Navarro	
				Taylor	Pecan Gap	
				Austin	Austin Chalk	
			TURONIAN	Eagle Ford	Eagle Ford Shale	
					Sub-Clarksville	
			CENOMANIAN	Woodbine	Woodbine	
		MICHENAN (Lower Cretaceous)	ALBIAN	Washita	Maness Shale	Maness Shale
					Buda	Buda
					Del Rio Shale	Del Rio Shale
					Georgetown	Georgetown
				Fredericksburg	Kiamichi	Kiamichi
					Edwards	Edwards
					Paluxy	Paluxy
					Walnut	Walnut
						Glen Rose



BHT: <300 degrees

Platform Express Triple Combo (AIT/CNL-FDC/PE)

NGT-NEUT to surface PEX)

GR-Acoustic to surface (DSI)

Schlumberger

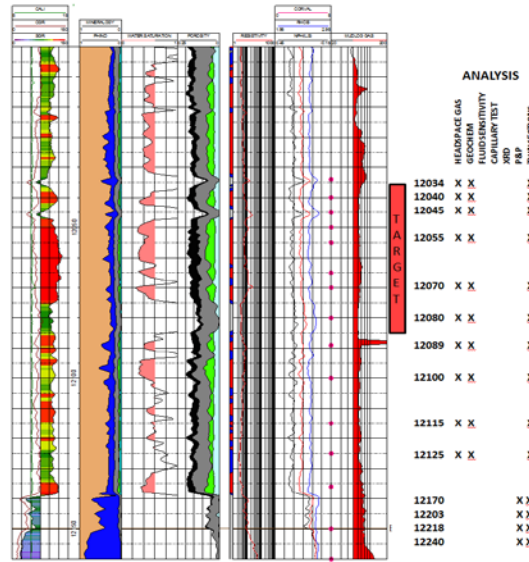
Dipole Sonic/Sonic Scanner

Elemental Capture (ECS)

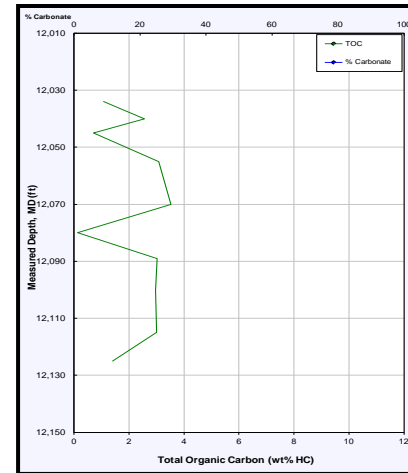
Dual Oil-Base Micro-Imager

50-100 Rotary Sidewalls

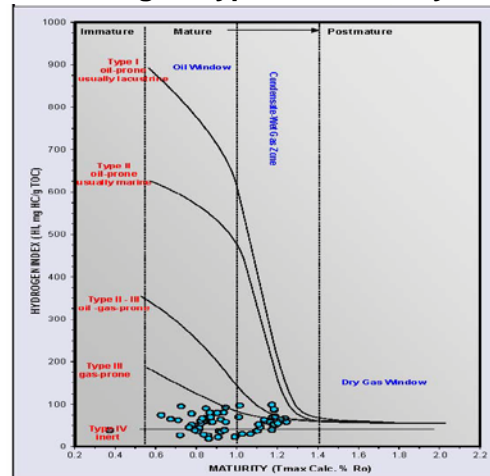
Rotary Sidewall Cores & Analysis



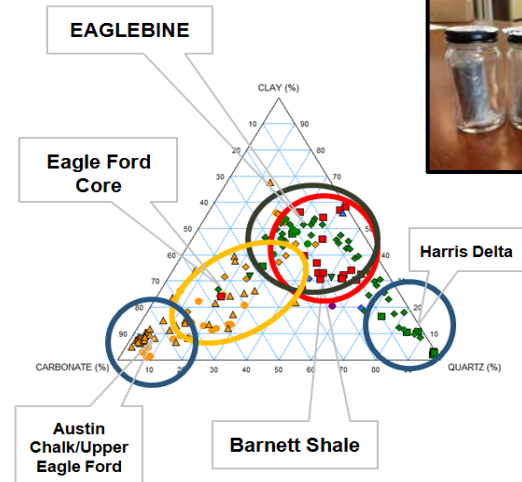
TOC



Kerogen Type and Maturity



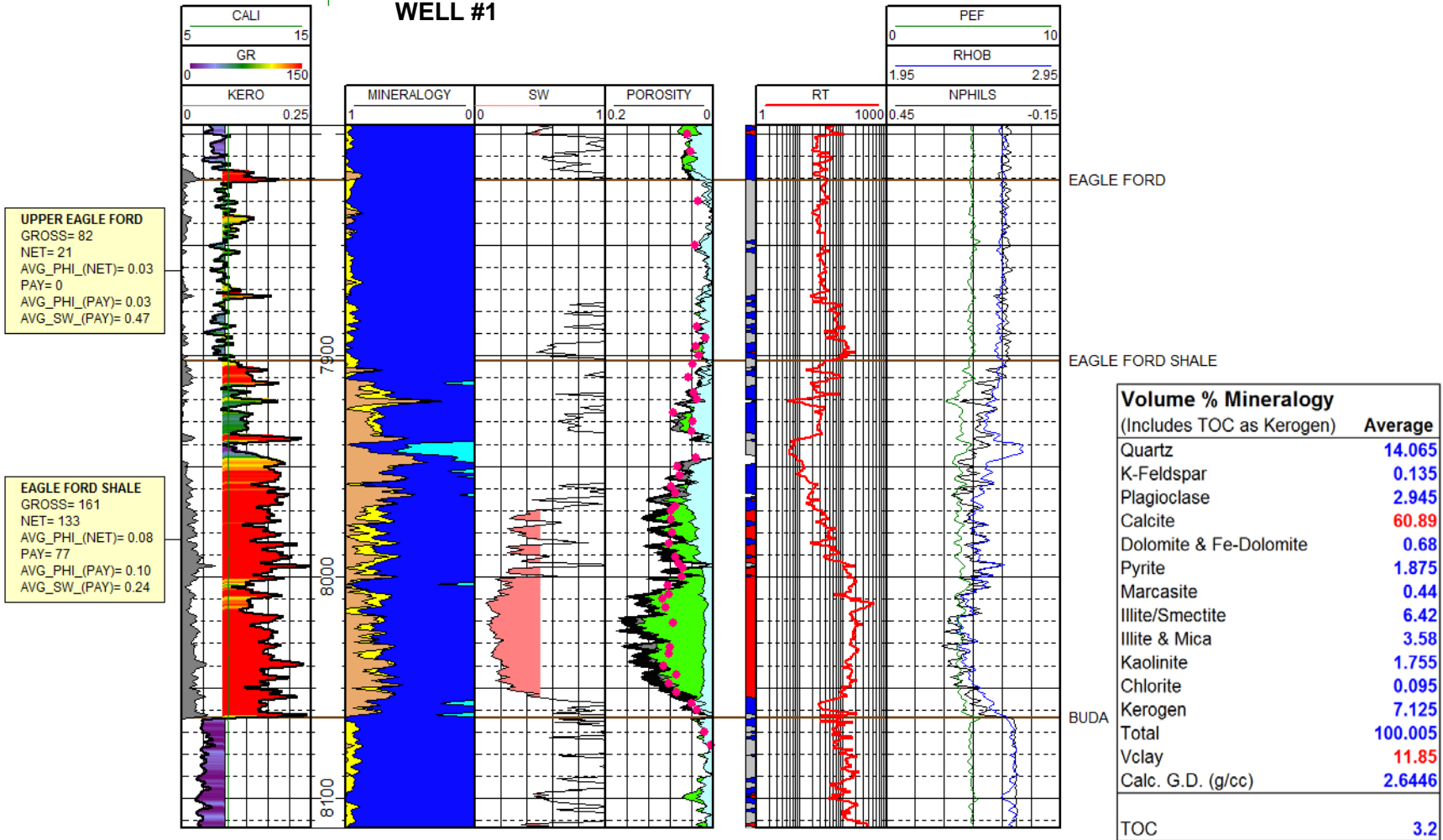
XRD Mineral and Clay Analysis



Customized Petrophysical Analysis



ZAZA ENERGY, LLC
WELL #1

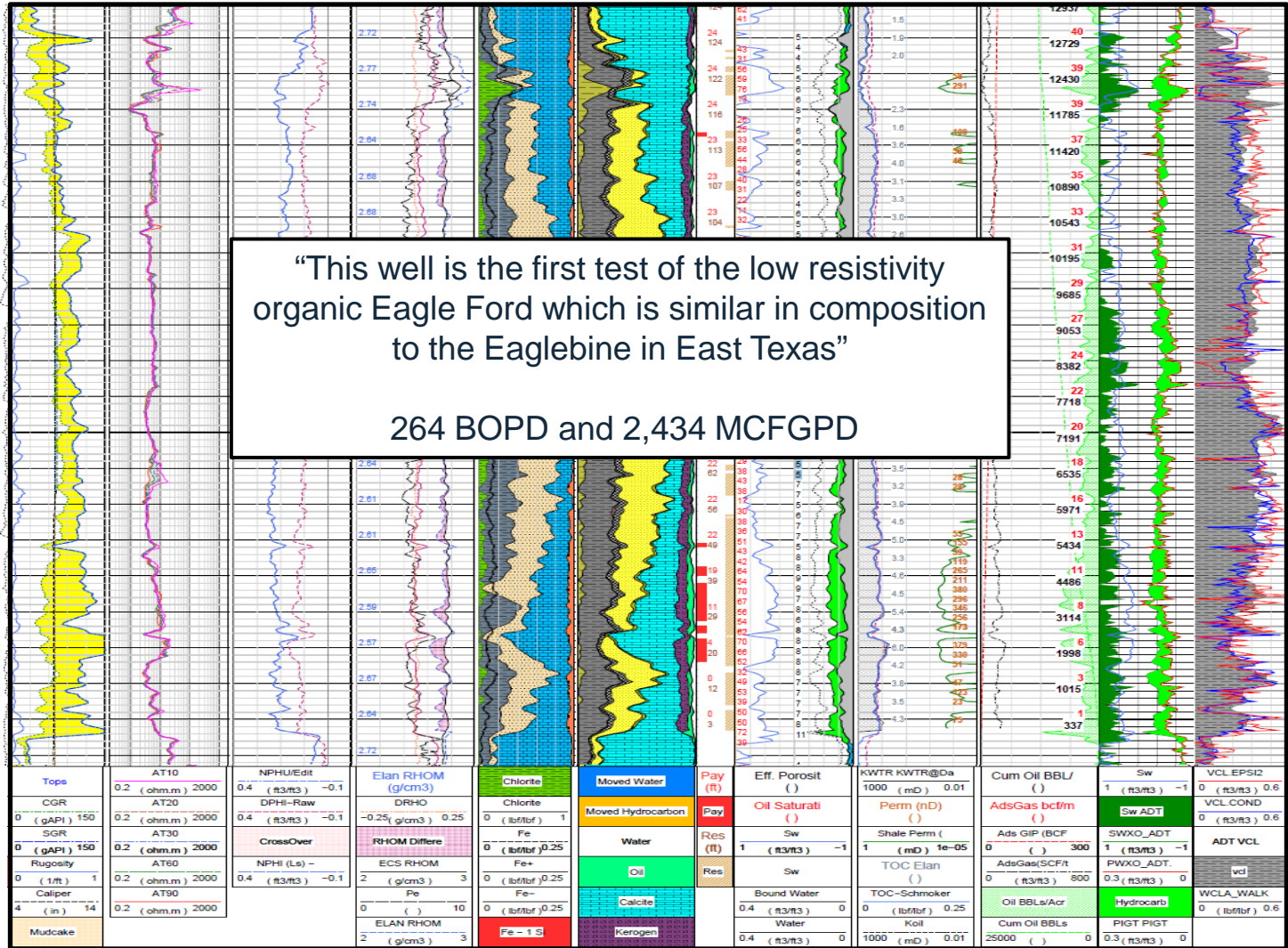


Schlumberger EFS - Using ADT Dielectric

Dielectric Scanner



ADT Sw



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Real Time FLAIR Fluid Logging and Analysis

- FLAIR fluid logging and analysis in real time is a premium gas service focused on fluid facies characterization and early information about formation fluid composition.
- The interpretation of the gas data from the 8 formation levels led to the identification of 4 main fluids.
- FLUID 1: This fluid is recorded from in Limestone's in Austin Chalk. This fluid is composed of 64-70% C1. Formation is Limestone and Shales.
- FLUID 2: This fluid is recorded from the deeper Austin Chalk and has a lighter HC composition with 78% C1.

FORMATION FLUID COMPOSITION (C1-C5 with Corrections for Recycling only)

Fluids	Peak	Meas. Depth (ft)		Vert. Depth (ft)		%	100%						
		From	To	From	To		%	%	%	%	%	%	
													%C1
1A	1	12223	12262	12222	12261		66.9	16.8	7.4	2.2	2.8	2.7	1.2
	2	12315	12342	12315	12342		65.4	18.1	8.1	2.2	3.0	2.1	1.1
1B	3	12411	12433	12411	12432		64.2	18.7	8.3	2.4	3.2	2.2	1.0
	4	12448	12485	12448	12484		63.4	18.5	8.4	2.7	3.4	2.5	1.1
1C	5	12504	12539	12503	12538		63.6	18.5	8.3	2.7	3.5	2.4	1.0
	6	12820	12828	12819	12827		69.7	16.3	6.0	2.1	2.5	2.4	1.1
2	7	12889	12909	12887	12908		77.9	12.6	4.1	1.4	1.5	1.9	0.6
	8	12924	12933	12922	12931		77.9	12.7	4.2	1.4	1.4	1.9	0.5
	9	12943	12954	12941	12952		77.2	13.5	4.3	1.4	1.4	1.6	0.6
	10	12986	12994	12985	12993		77.0	14.0	4.4	1.2	1.5	1.4	0.5
3A	11	13042	13064	13040	13062		76.6	14.6	4.7	1.1	1.6	0.9	0.5
	12	13070	13085	13068	13083		74.4	15.7	5.3	1.3	1.8	0.9	0.5
	13	13101	13130	13099	13129		75.1	15.2	5.1	1.3	1.7	1.0	0.5
	14	13138	13145	13136	13143		74.6	15.2	5.3	1.5	1.8	1.1	0.6
3B	15	13149	13160	13147	13158		73.4	15.4	5.5	1.7	1.9	1.3	0.6
	16	13179	13195	13177	13193		72.4	16.1	5.6	1.9	1.9	1.5	0.6
	17	13202	13215	13200	13214		71.8	16.2	6.0	2.0	2.0	1.4	0.6
	18	13238	13251	13236	13249		70.4	16.7	6.3	2.3	2.1	1.5	0.7
	19	13270	13282	13268	13280		70.9	16.6	6.1	2.1	2.1	1.4	0.7
	20	13285	13295	13283	13293		72.1	15.9	5.9	2.1	2.0	1.3	0.7
	21	13305	13313	13303	13311		71.8	16.2	6.0	2.1	2.0	1.3	0.6
4	22	13410	13423	13408	13421		83.0	9.8	3.5	1.2	1.2	1.0	0.4

Table 3: Formation fluid composition for various fluids recorded in the well.

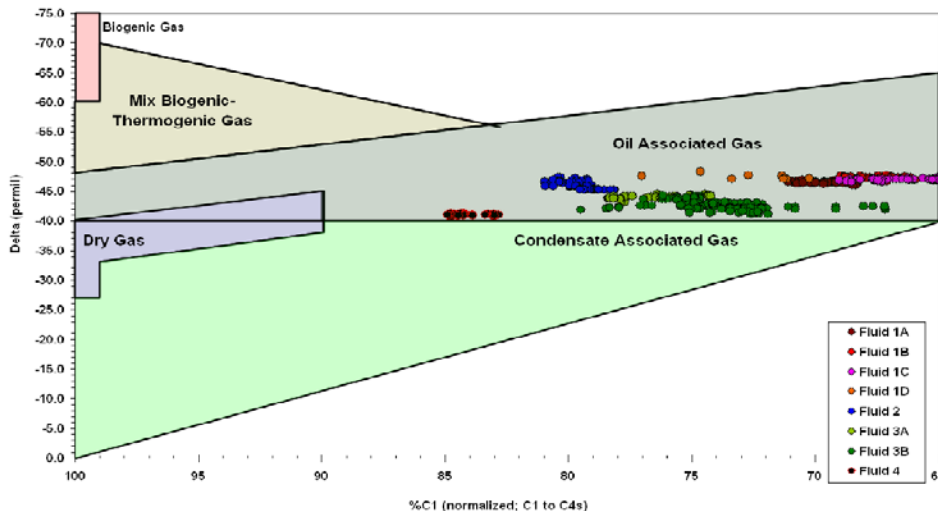
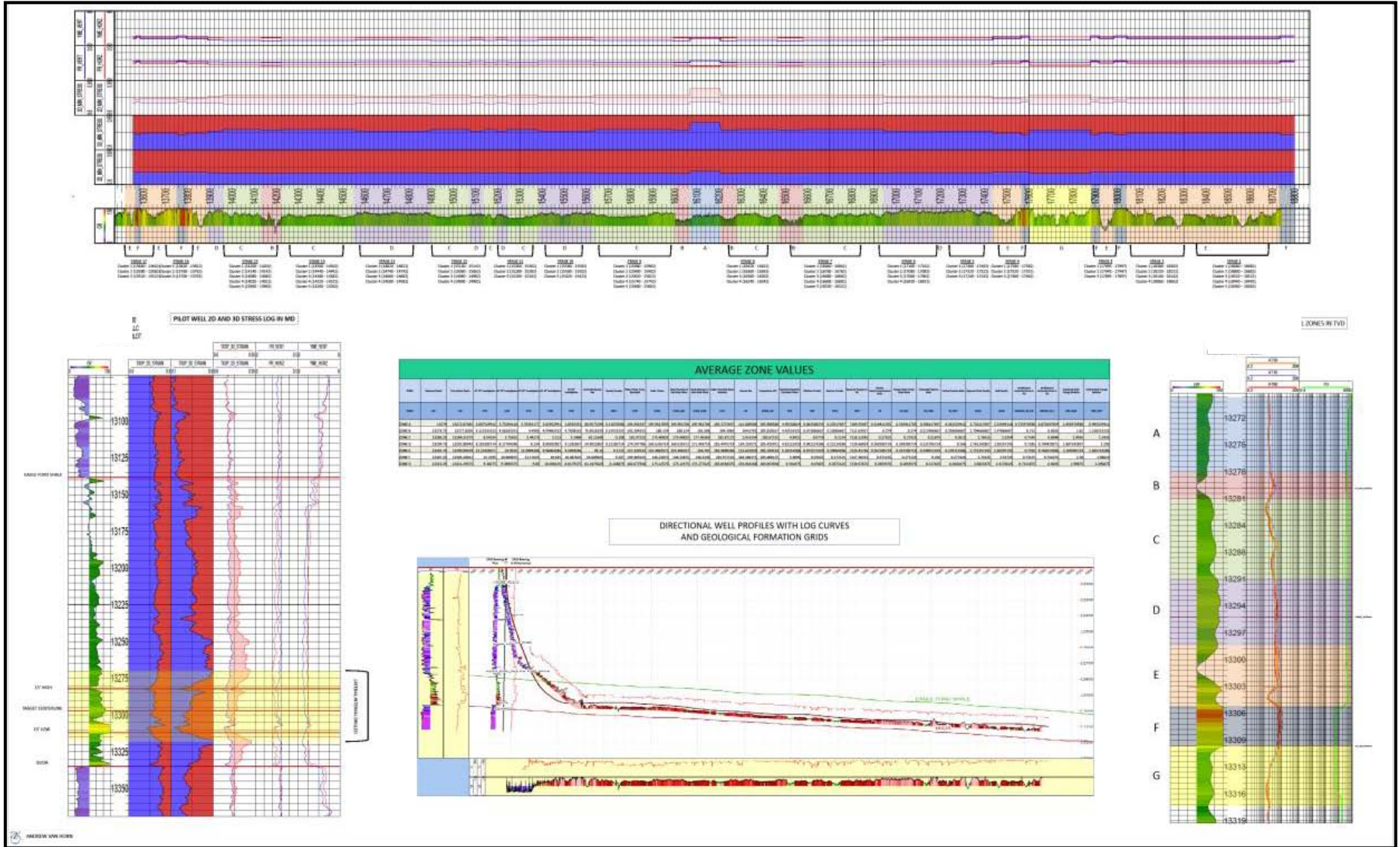


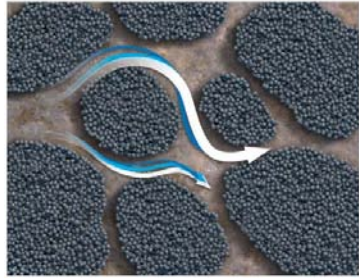
Fig. 18: Hydrocarbon Fluid associations – Schoell Diagram

- FLUID 3: Fluid 3A, 3B are recorded in the Eagleford and show a gradual gradation to heavier composition at the base ranging from 76% C1 at the top to 71% at the base.
- FLUID 4: Fluid 4 recorded in the Buda Limestone shows a lighter composition with 83% C1
- Detailed analysis of normalized C1-C4 suggest a high concentration of oil with associated gas (volatile oil) for the organic section.

Optimized Stimulation Design (Pilot to Lateral Rock Properties)



Optimized Stimulation Design (FRAC Procedure)



**Schlumberger HiWAY
Flow-Channel Fracturing**

Initial Design

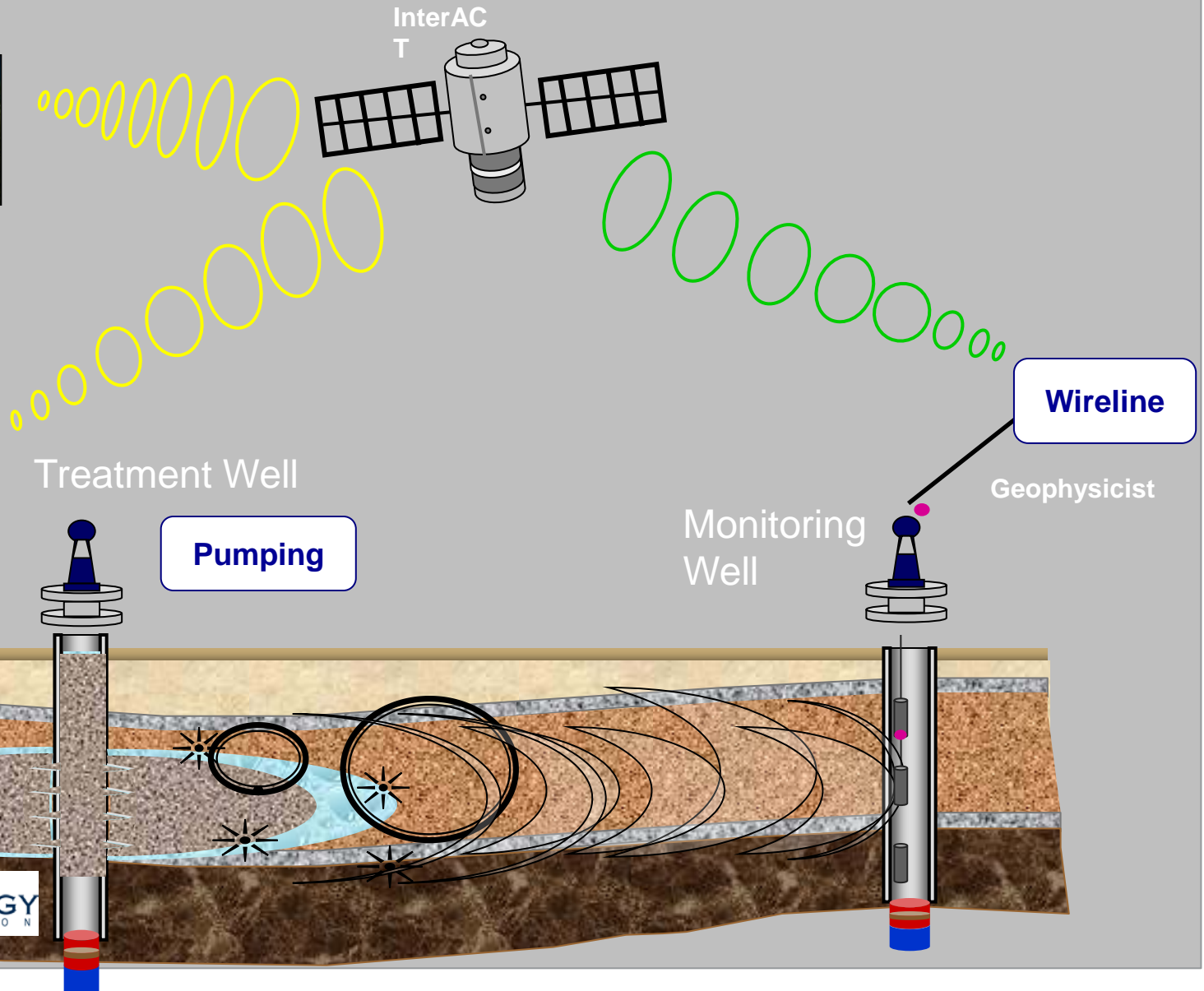
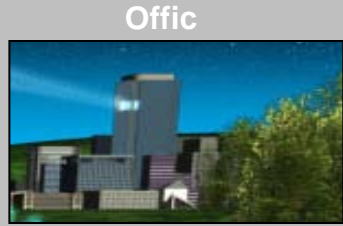
- ❑ 16 stages optimized using 2D and 3D stresses derived from vertical log and using horizontal gamma ray correlation
- ❑ Based on length of like stresses – Range of 3-5 clusters and 60-80 feet were chosen; 2 foot perf. spacing – 6 shots per foot
- ❑ Pump schedules adjusted per stage based on cluster concentration and spacing

Adjustments to Achieve Success

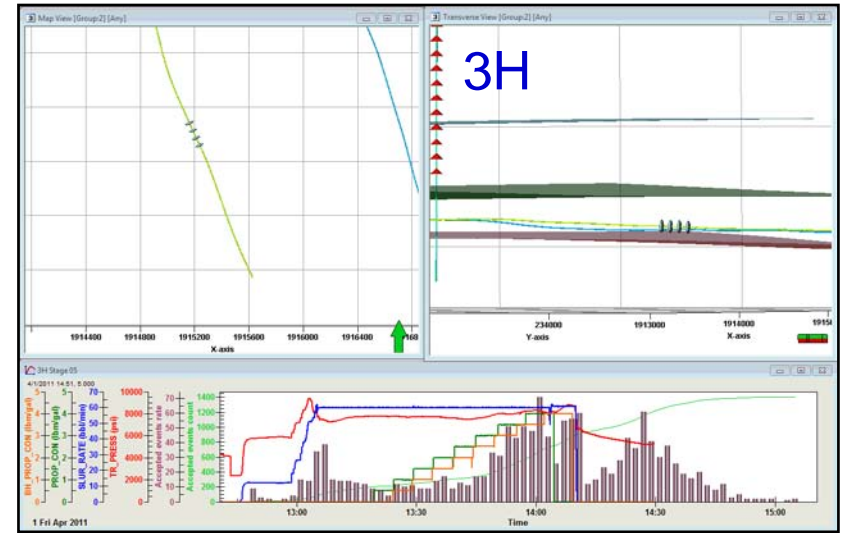
- ❑ Increase Pad by 5 lb./1000 gallon gel (35#) to increase the viscosity in order to increase fracture width. Slurry pumped with 30# gel
- ❑ Add Treesaver – to increase treating pressure to 12,000 psi and increase rate to aid in width
- ❑ Increase Pad volume to 50% of the dirty slurry volume in order to offset the fluid loss experienced in the vertical fracture direction



Microseismic Overview



Compare & Contrast Rock Layer Properties Using Microseismic



Well No. 2H

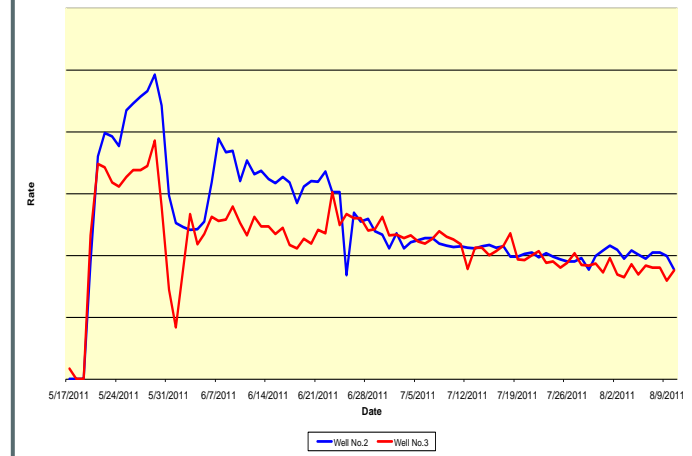
Porosity 6-14%
 YM (Static) 3.4 - 4.6 E6
 Poision Ratio 0.25 -0.28

After 8 months

Rate **205 bopd**

Cum Prod **88,000 bbls**

Well No.2 and No.3 Production



Well No. 3H

Porosity 15-23%
 YM (Static) 2.8 - 3.2 E6
 Poision Ratio 0.25-0.27

After 8 months

Rate **155 bopd**

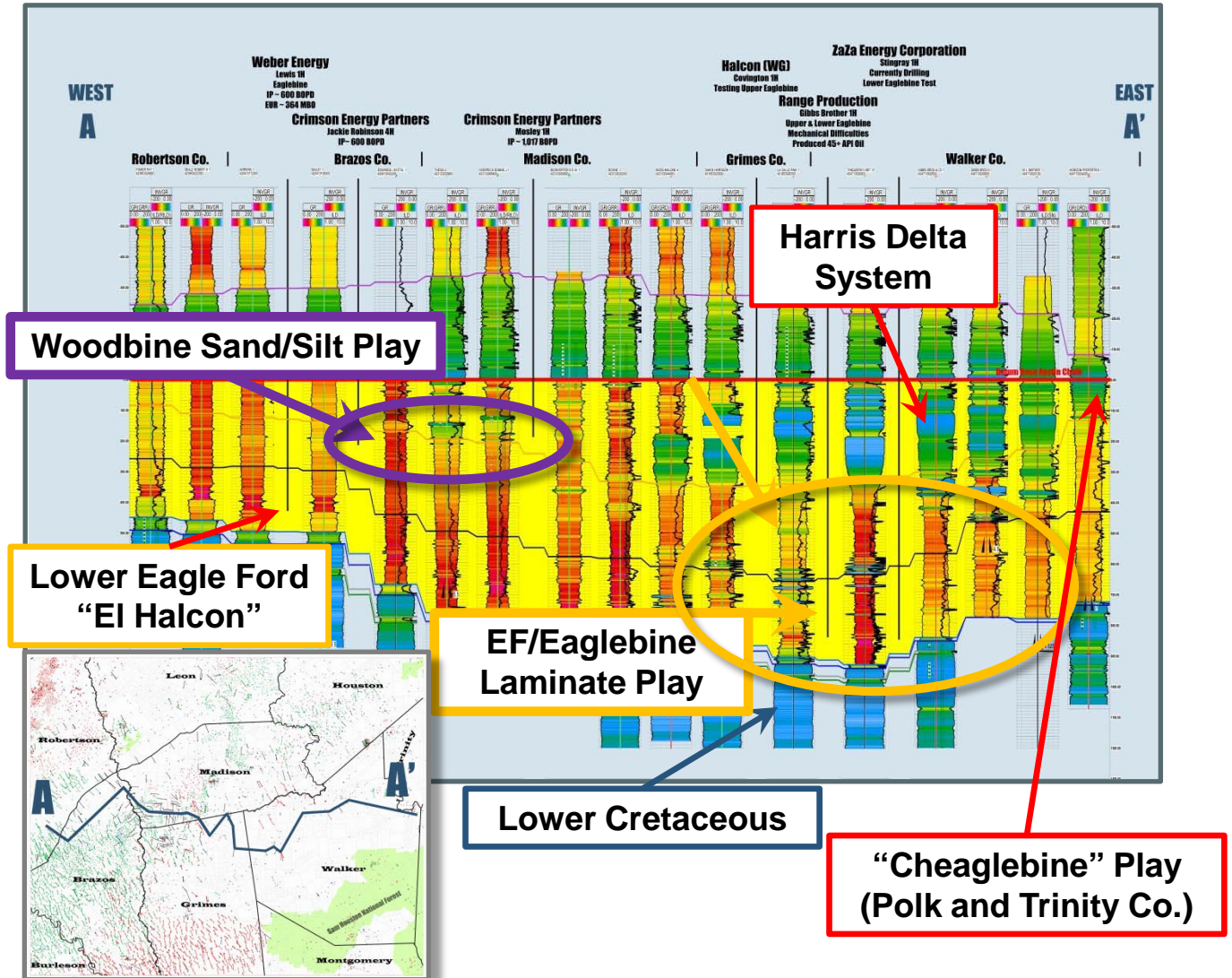
Cum Prod **69,000 bbls**

Geologic Overview – Eagle Ford East / Eaglebine Play

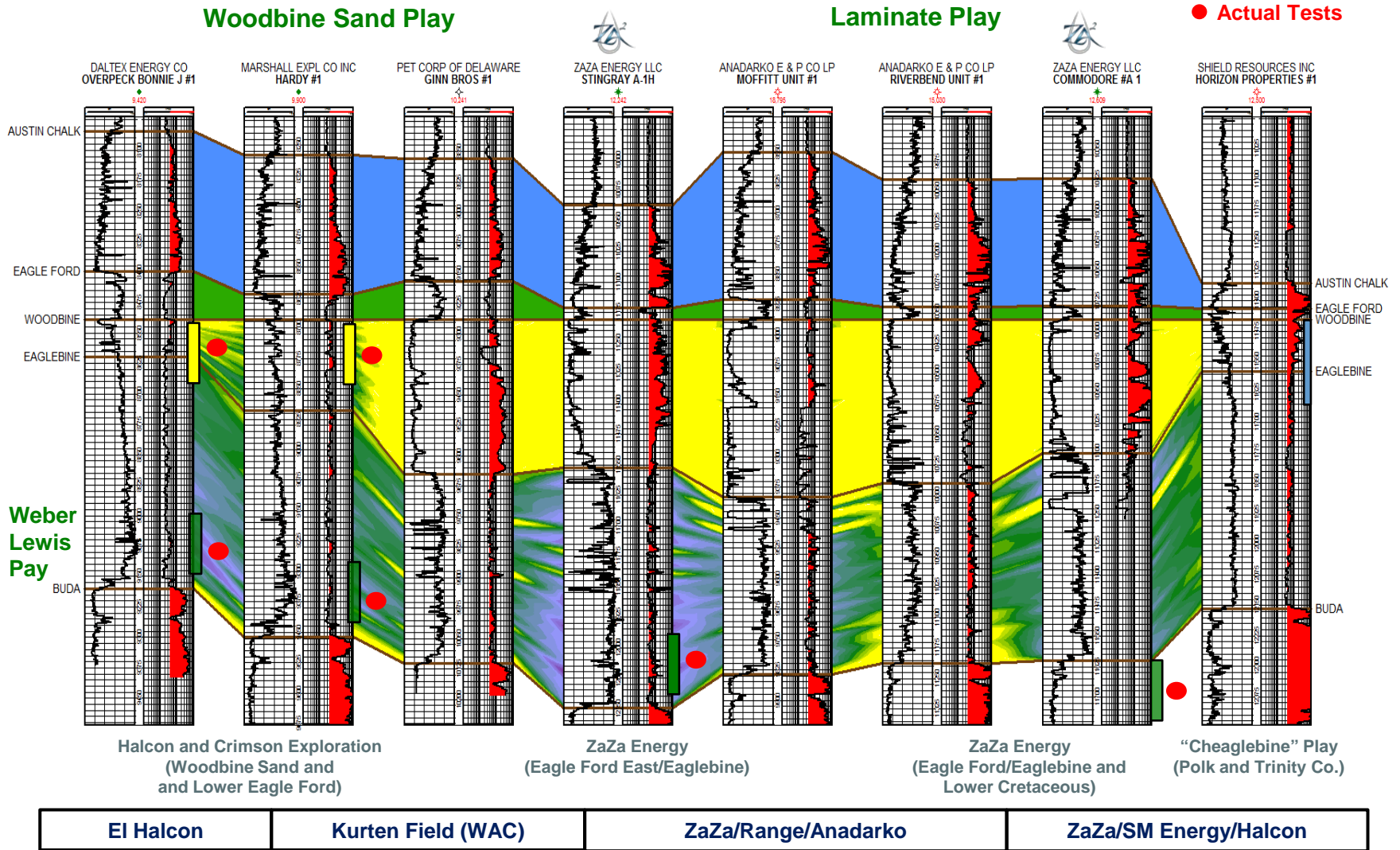
Eagle Ford East / Eaglebine (Multi-Play) Cross Section

Key Points

- The cross section represents the Woodbine sand / silt play, the Upper Eaglebine play and the Lower Eaglebine organic rich sand / shale section below
 - The recent successfully completed Weber 1H horizontal well targeted the Lower EF/Eaglebine in the oil window
- The Eaglebine Laminate is recognized as a "hot" shale with increased resistivity that exhibits oil and gas shows on the mudlogs across the zone
 - Range's Gibbs 1H was drilled in the wet gas window, but encountered mechanical difficulties
- The Upper EF/Eaglebine is a silty shale play with lower resistivity similar to the TMS in Louisiana
 - Halcón's Covington 1H well appears to target the Upper Eaglebine



Eagle Ford East / Eaglebine Trend – Transition of Play Types



Eagle Ford East / Eaglebine Geology & Stratigraphy

Geologic Backdrop

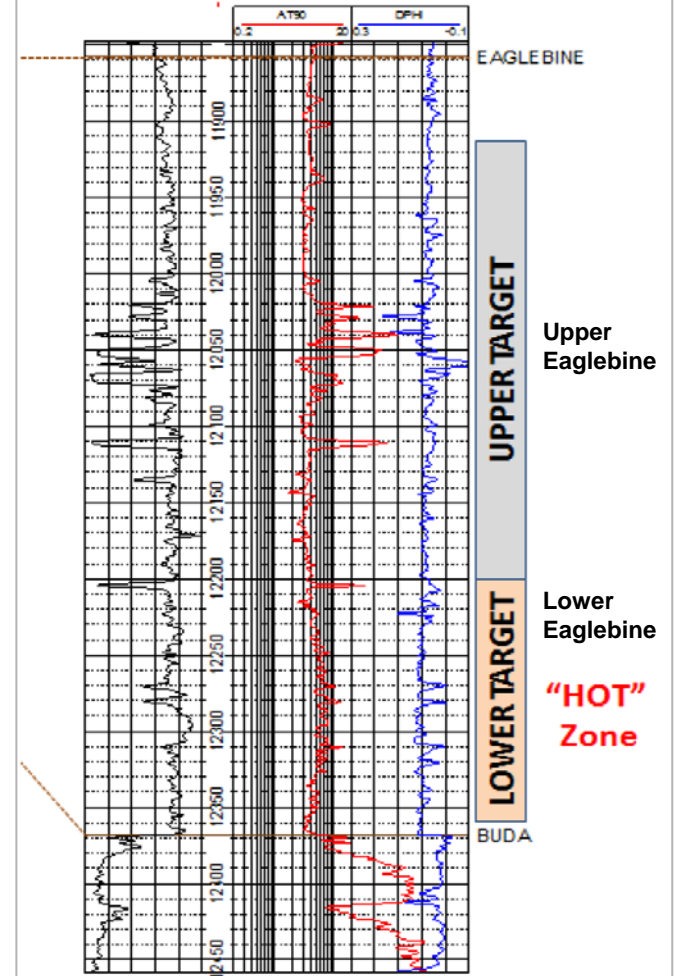
- The Upper Cretaceous Eaglebine is an organic rich section situated between the Austin Chalk and the Buda
- Broadly speaking the Upper Eaglebine is a collection of sandstone packages making it more conventional in nature, interbedded with organic rich shales
- The Lower Eaglebine has characteristics of a typical "hot" shale
- Studies and log data indicate hydrocarbon bearing formations that exhibit high resistivity and porosity
- Permeability is generally low, but horizontal drilling and multi-stage fracs (10-25 stages) have proven successful in enhancing well productivity
- Found at depths of 10,500' – 13,500' in current focus area

Stratigraphic Column – East Texas Basin

PERIOD	EPHON	AGE Ma	GROUP OR FORMATION	GAS	OIL	POT. SOURCE ROCK
QUAT.	HOLO.	0.01	Undifferentiated	▲	●	
	PLEI.	Calabrian				
TERTIARY	PLIOCENE	2.6	Undifferentiated	▲	●	
		5.3	Undifferentiated	▲	●	
	MIOCENE	23.0	Fleming Fm.	▲	●	
		28.4	Anahuac Fm.	▲	●	
	OLIGOCENE	28.4	Catahoula Fm.	▲	●	
		33.9	Frio Fm.	▲	●	
	Eocene	37.2	Vicksburg Grp.	▲	●	★
		48.6	Jackson Grp.	▲	●	★
	PAL.	48.6	Clairborne Grp.	▲	●	★
		55.8	Wilcox Grp.	▲	●	★
	Maastrichtian	65.5	Midway Grp.	▲	●	★
		70.6	Navarro Grp. (Olmos Fm. - Escudido Fm.)	▲	●	★
	UPPER	83.5	Taylor Grp. (Anacacho Ls./ San Miguel Fm./ Ozam Fm./Annona Ch.)	▲	●	★
		89.3	Austin Grp./Tokio Fm./ Eutaw Fm.	▲	●	★
LOWER	99.6	Eagle Ford Fm.	▲	●	★	
	112	Woodbine Fm./Tuscaloosa Grp.	▲	●	★	
Albian	125	Washita Grp. (Buda Ls.)	▲	●	★	
	136	Fredricksburg Grp. (Edwards Ls./Miami Sh./Paluxy Fm.)	▲	●	★	
Aptian	145.5	Glen Rose Fm. (Rodessa Fm.)	▲	●	★	
	151	Pearsall Fm.	▲	●	★	
UPPER	151	Siigo Fm. (Pettit Fm.)	▲	●	★	
	156	Hosston Fm. (Travis Peak Fm.)	▲	●	★	
MID.	161	Cotton Valley Fm.	▲	●	★	
	161	Smackover Fm. (Natchitoches Fm.)	▲	●	★	
UP.	197	Haynesville Fm./Gilmer Ls.	▲	●	★	
	201.6	Louann Salt Werner Fm.	▲	●	★	
UP.	201.6	Eagle Mills Fm.				

Eaglebine Log Section

TANQUERAY UNIT #1



Eagle Ford East / Eaglebine – Typical Mudlog Response (ZaZa Acreage)

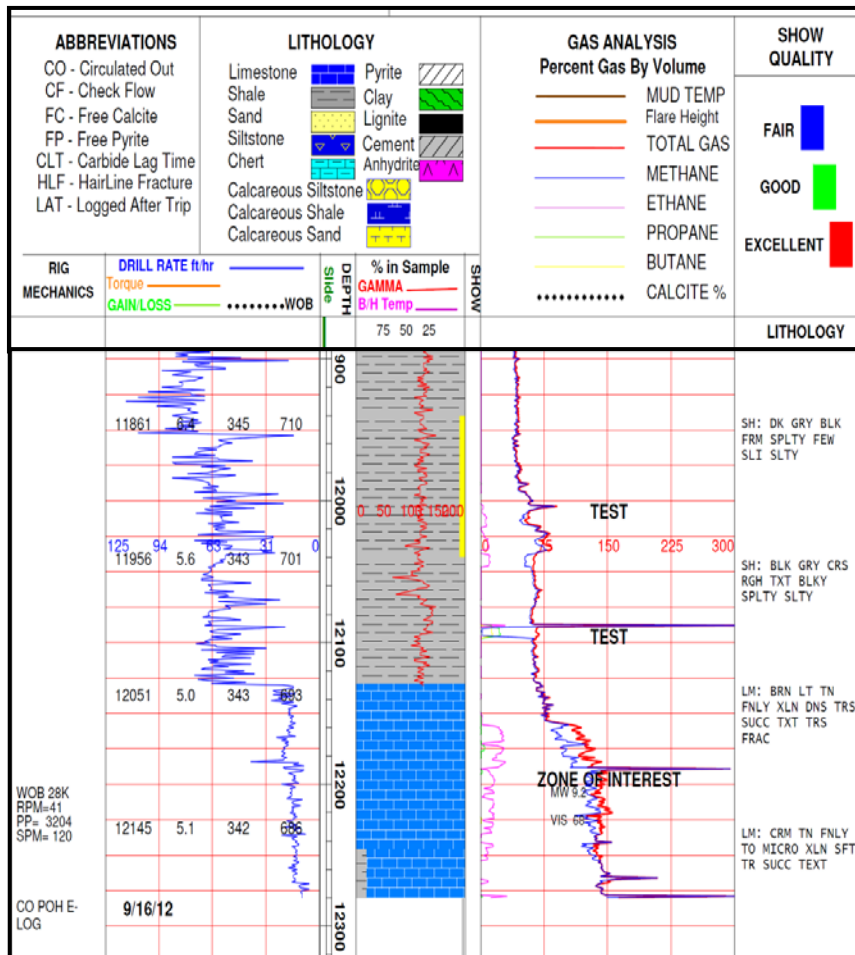
Eagle Ford East/Eaglebine Mudlogs

- Historical mudlogs across the area have significant oil and gas shows in both the Upper and Lower Eaglebine section
- Eaglebine section is silica-rich organic shale, over 450' thick
- C1-C5 oil and gas shows prevalent throughout section
- Historical wells have produced economic quantities of oil and gas in individual sand lenses throughout the Eaglebine section

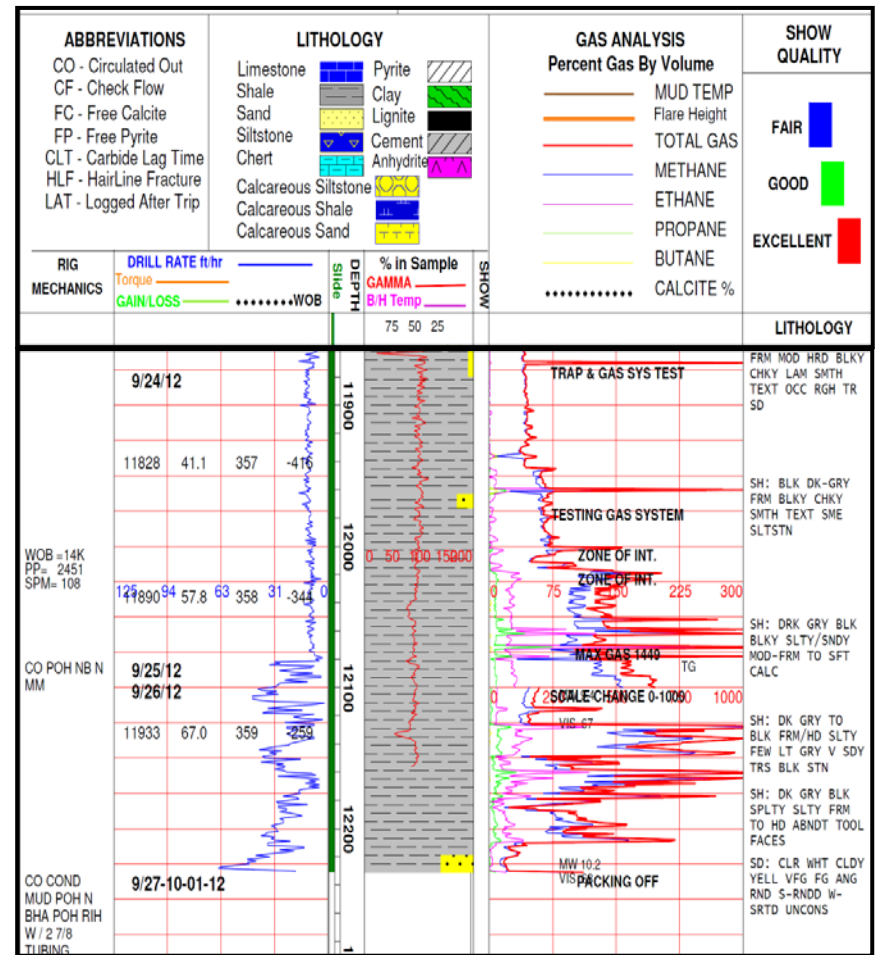


Eagle Ford East / Eaglebine – Pilot vs. Horizontal Effective Stress

Original Hole (MW 9.5 ppg)



Initial Horizontal (MW 10.2 ppg)

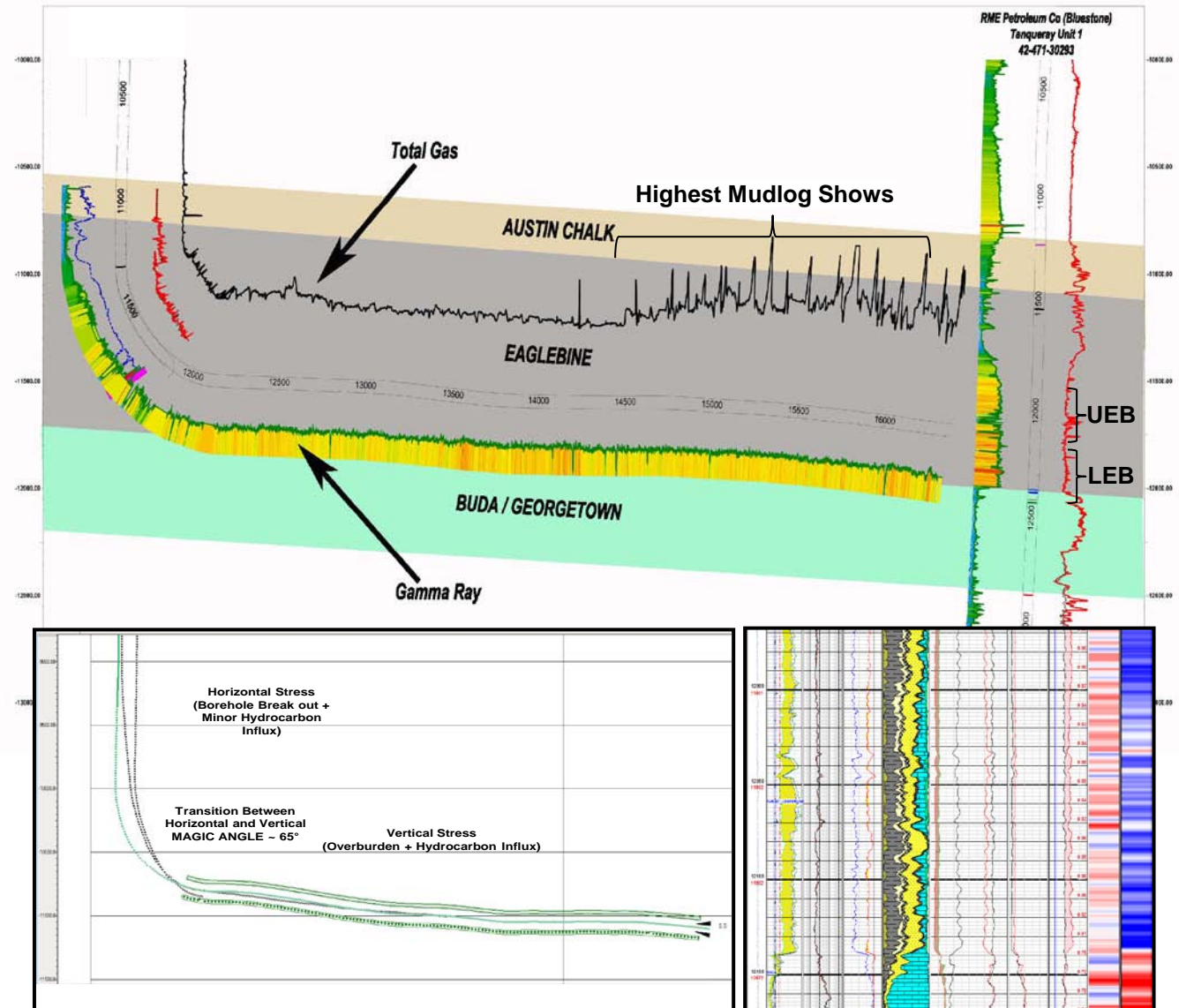


Mudlog total gas and C1-C5 components show significant increase in horizontal portion of well

Eagle Ford East / Eaglebine – Horizontal Well Activity

Key Points

- Horizontal wellbores are drilled and completed in the Upper or Lower Eaglebine
- Initial wells encountered casing problems when drilling out plugs and commercial tests were not achieved
- Oil samples taken from partial flow backs showed 45-48° API gravity
- Measured TOC and mudlog shows always increase at the tail of the well (Lower Eaglebine)
- All wells had significant surface pressure and indeterminately flowed oil to surface
- Total gas always increases as the horizontal well enters the Lower Eaglebine
- 2D/3D effective stress components are significantly different from traditional Eagle Ford
- Vertical wells can be drilled with MW less than 9.5 ppg.
- Exceeding 65 degrees required >13 ppg MWE



Eagle Ford East / Eaglebine – Optimized Drilling Plan

Drilling Assumptions

- All horizontal Eaglebine wells assumed to be drilled on approximately 160-acre density

Drilling Techniques

- Target depth range: 10,500' – 12,000' TVD
- Fresh water mud used for surface hole then switches to oil based mud for intermediate and production intervals
- Lateral length of approximately 5,800', with effective length of 5,000'

Completion Techniques

- Cemented liner and plug & perf completions have demonstrated superior results
- 13 to 17 stage hydraulic fracture treatments depending on lengths
 - Implies frac spacing of 250 to 320 feet
- Estimated 600 to 1,200 pounds of proppant per foot of lateral
- Proppant size: 20/40 or 30/50
- Proppant type: sand (out of area)
- Treating pressure: 10,000 max psi

Typical Upper/Lower Eaglebine Wellbore Diagram

FORMATION		PILOT HOLE DEPTH		CASING PROFILE	HOLE SIZE	CASING SPECS AND CEMENT DETAIL	MW MUD TYPE	DEVIATION INFORMATION
		TVD	MD					
		80'			20"	20" Conductor	Existing	
Wilcox		3,332'	3,332'		17-1/2"	13-3/8" 61# J-55 BUT@ 3,200' Lead - 1,560 sks, 12.20 ppg, yld 2.28 Tail - 900 sks, 16.4 ppg, yld 1.06 cement to surface FIT 13 ppg EMW	WBM 9.0 ppg	Vertical < 3°
Midway		7,773'	7,773'		12-1/4"	Intermediate String 9-5/8" 47# P-110 LTC @ 11,553' MD, 11,530 TVD @ 24°	OBM 8.6 - 9.0 ppg	+/- 24° KOP: +/- 11,400'
Taylor		9,779'	9,779'			Lead - 335 sks, 13.2 ppg, yld 1.94 Tail - 485 sks, 16.4 ppg, yld 1.41 TOC @ 9,000' MD		
Pecan Gap		10,079'	10,079'					
Austin Chalk		10,810'	10,810'		8-1/2"	Production String 5 1/2" 20# P-110 SHLT		Lateral TD 16,442' (MD) 11,805' (TVD) at 92.5°
Eagle Ford		11,160'	11,160'			Lead - 1,340 sks, 16.4 ppg, yld 1.43 TOC @ 9,000' MD		
Woodbine		11,181'	11,181'					
Target Centerline		11,980'	11,980'					
Buda		12,067'	12,106'					
Pilot Hole TD		12,200'	12,239'			5,000' Effective Lateral Length 5,800' Total Lateral Length		

Summary and Observations

- ❑ Integration of basic geology, physical rock properties, and micro-seismic data significantly improve our ability to characterize features in the horizontal reservoir that directly impact well placement, directional targeting, hydrocarbon volume, and overall well performance.
- ❑ Design your first well to get producible hydrocarbons and to get the technical information you need to access commerciality.
- ❑ These first “Proof-of-Concept” wells are important to prove up the play and drive future expansion and development.
- ❑ A pilot in the first well of a development area will usually provide enough data for layer definition, formation rock properties, target planning, and initial completion design in the horizontal well
- ❑ Run the appropriate logging suite to identify matrix mineralogy, total porosity, and saturation (resistivity). Spectral GR data is a cheap option for measuring organics.
- ❑ Real-time microseismic data, although costly, can significantly aid in reservoir evaluation and completion designs.
- ❑ Learn how to measure the “Value of Information”

“If we all followed the same industry path with the same data, we would all make the same maps and compete for the same areas. You have to get out of the box and think ahead of the play. Where does it go? How does it change? You have to acquire new data and take risks to grow a play. By doing that, you achieve the first mover advantage.”



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