



Well History

Piceance Creek Unit FRU 197-33A4
Rio Blanco County, Colorado
API # 05-103-11100-00

EPOCH Well Services, Inc.
New Iberia, Louisiana

ExxonMobil
Development

 **EPOCH**

Well History

ExxonMobil Production Company

**Piceance Creek Unit FRU 197-33A4
Rio Blanco County, Colorado**



EPOCH Well Services, Inc.

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General Overview and Geology ExxonMobil Production Company

**Piceance Creek Unit FRU 197-33A4
Rio Blanco County, Colorado**



Introduction

Epoch Well Services (Epoch) of New Iberia, LA has been providing mud logging and contract geology services to the ExxonMobil Drilling Group (ExxonMobil) in the Piceance Basin of northwestern Colorado since late 2002. As part of these services, Epoch was requested to provide mudlogging and geologic services for the Piceance Creek Unit (FRU) 197-33A4 production well. The well was drilled as the second hole in a series of directional wells for production on the Piceance Creek Unit pad. The well is located in the Piceance Basin at the following coordinates:

- Latitude N39° 54' 56.038"
- Longitude E108° 17' 6.105"

The well was spudded on May 19, 2009. Drilling operations were conducted from spud through to a total depth of 12,512' (MD) on June 06, 2009. Drilling operations were conducted by Helmerich & Payne using a Flex 3 rig (#239). Epoch personnel logged and collected samples starting at 3,900' through to 12,510' MD. Drilling fluid engineering services were provided by Halliburton. The well was drilled with conventional water-based mud (Low Solids Non-Dispersed) from surface through TD.

The well was cased and cemented according to the following:

- 16-inch casing from surface to 130 feet;
- 10.75-inch casing at 3,877 feet;
- 7-inch casing at 8,717 feet.
- 4.5-inch casing at 12,501 feet

Epoch provided the following services for this drilling operation:

- General mudlogging and geologic services including sample collection and description, and preparation of a lithologic log;
- Determination of total gas recovered using a QGM™ gas trap and quantified using a proprietary Epoch Total Hydrocarbon Analyzer equipped with a Flame Ionization Detector;
- Determination of gas chromatography using a proprietary Epoch Gas Chromatography unit also equipped with a Flame Ionization Detector which quantified the hydrocarbon species of methane, ethane, propane, iso- and normal butane, and iso- and normal pentane;
- CO₂ determination;
- Interaction with ExxonMobil on-site and Houston-based personnel to determine formation tops and provide support as required through drilling.

General Geology

The Piceance Creek Basin is a discrete basin of sediments formed as a result of uplift associated with late-Cretaceous to Tertiary Laramide orogenic activity. The Piceance Creek Basin encompasses late Cretaceous and Tertiary continental rocks that are assigned to a variety of stratigraphic units. These units form a complex system characterized by early deposition of primarily marine and marginal-marine sediments associated with transgression-regression of a large inland sea followed by intricate inter-fingering of fluvial, marginal lacustrine and lacustrine environments. The stratigraphic nomenclature used for the FRU 197-33A4 well incorporates terminology as developed by ExxonMobil and provided to Epoch.

Geologically, Epoch encountered 4 separate formations ranging in age from Eocene to Cretaceous. These formations, in order of their occurrence from surface, along with their assigned age periods are listed as follows:

- Wasatch Formation – Eocene;
- Ohio Creek Formation - Paleocene
- Williams Fork Formation – Cretaceous;
- Iles Formation – Cretaceous.

The Williams Fork and Iles Formations are assigned to the Mesaverde Group.

The Wasatch, Williams Fork, and Iles Formations can be broken down into constituent members as follows:

- Wasatch A, B, C, D, F, G, and I Members;
- Williams Fork 850, 800, 700, 600, 500, 400, 300, 200 and Cameo Members;
- Rollins, Cozzette, and Corcoran Members of the Iles Formation.

According to ExxonMobil nomenclature, below the Wasatch Formation the various formations and members are combined into 6 separate stratigraphic groups for classification of general reservoir type. The groupings are described as follows:

- Williams Fork 800 Member to Ohio Creek – Proximal Braided Reservoirs
- Williams Fork 200 to Williams Fork 700 Members – Distal Braided Reservoirs;
- Cameo Member – Meandering Stream Reservoirs;
- Rollins Member – Marine Reservoirs;
- Corcoran Coastal Plain and Cozzette Members – Meandering Stream Reservoirs;
- Corcoran Marine and Sego Members – Marine Reservoirs.

ExxonMobil has further defined the stratigraphic sequence within the Piceance Basin according to sequence type classification. The relevant classifications are described as follows:

- AS – Abandonment Surface
- SB – Sequence Boundary
- FS – Flooding Surface
- MFS – Maximum Flooding Surface

In accordance with this classification scheme, the sequence tops and correlated stratigraphic name are presented in the table on the following page. All formation and member tops were identified from the mudlog and are presented in measured depth (MD). It will be noted that some of the stratigraphic units as identified by ExxonMobil are not included in this table. Those units omitted from this presentation occur within formations or members and, for reasons of simplicity, were not included.

FRU 197-33A4 Formation Tops

Formation/Member Name	Stratigraphic Unit Top	Depth (MD/TVD)
Wasatch Formation		
Wasatch "G"		5560' / 5151'
Wasatch "I"		5885' / 5465'
Ohio Creek Formation		
	950 Abandonment Surface (AS)	7372' / 6945'
Williams Fork Formation		
WF 850	900 Sequence Boundary (SB)	7625' / 7198'
WF 800	850 Abandonment Surface (AS)	7800' / 7373'
WF 700	800 Sequence Boundary (SB)	8155' / 7728'
WF 600	690 Abandonment Surface (AS)	8275' / 7848'
WF 500	600 Sequence Boundary (SB)	8558' / 8131'
WF 400	490 Abandonment Surface (AS)	9115' / 8688'
WF 300	400 Sequence Boundary (SB)	9772' / 9345'
WF 200	290 Abandonment Surface (AS)	10830' / 10403'
Cameo	210 Sequence Boundary (SB)	11125' / 10698'
Iles Formation		
Rollins Member	200 Sequence Boundary (SB)	11432' / 11005'
Cozzette Member	180 Flooding Surface (FS)	11625' / 11198'
Corcoran Coastal Plain	140 Flooding Surface (FS)	11952' / 11525'
Corcoran Marine	140 Sequence Boundary (SB)	12470' / 12043'

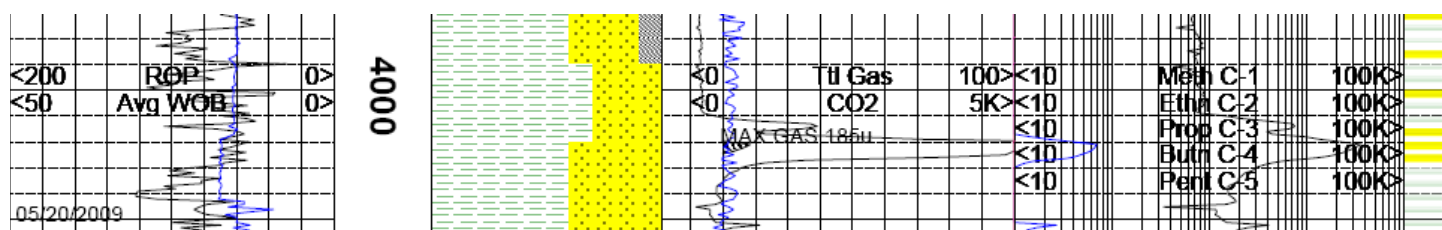
Upper Wasatch Formation

The Upper Wasatch Formation was encountered from the point of drilling out of surface casing (3851' MD). Overall, the Upper Wasatch Formation consists of variably colored shale, sandstone, siltstone, and carbonates.

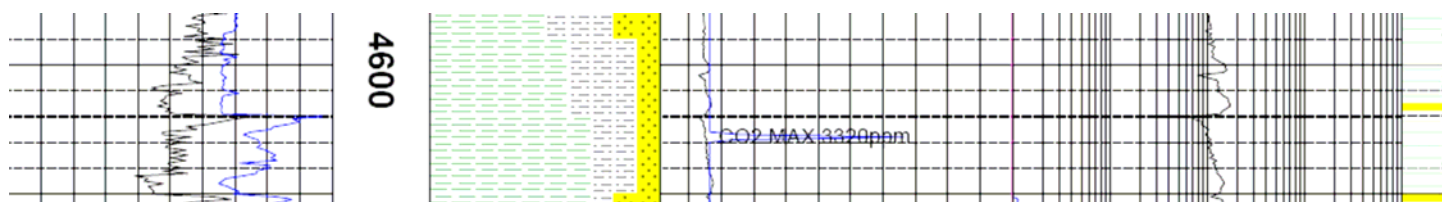
Relevant data concerning drilling of the Upper Wasatch are presented as follows:

Upper Wasatch Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	138.005	3319.908	185.737
Minimum	11.201	330.000	0.000
Average	85.031	698.820	6.133
Standard Deviation	23.263	502.461	10.065



The first maximum gas show appeared at 4020' and was 185 units.



There was a significant CO2 show at 4628' and was 3320 ppm.

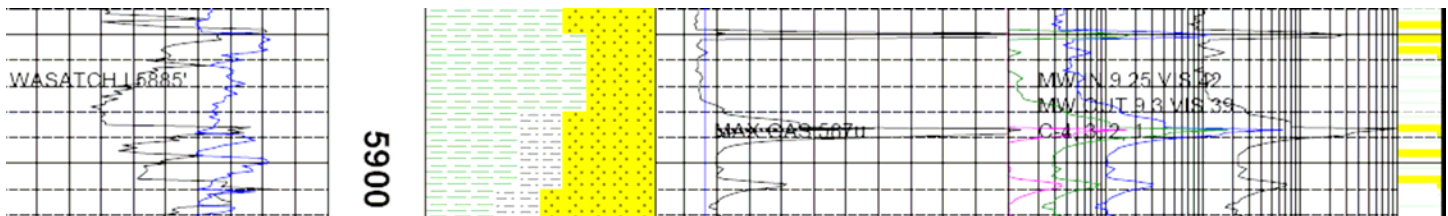
Chromatography for the section was C – 2, 1

Lower Wasatch Formation

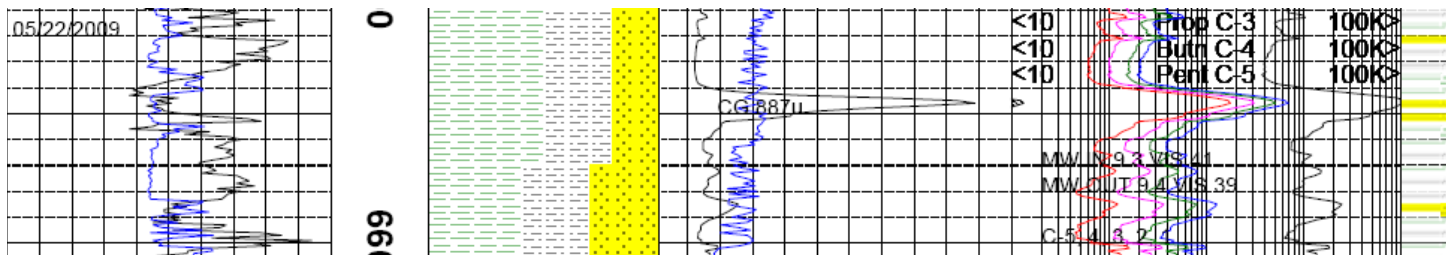
The lower Wasatch Formation is assigned from the occurrence of the top of the Wasatch "G" (5560' MD), to the Wasatch "I" (5885' MD), through to the top of the Ohio Creek Formation (7372' MD). The Wasatch "G" consists mainly of variably colored shale and sandstone near the upper portion of the formation and increases in siltstone percentage near the lower portion.

Lower Wasatch Statistics

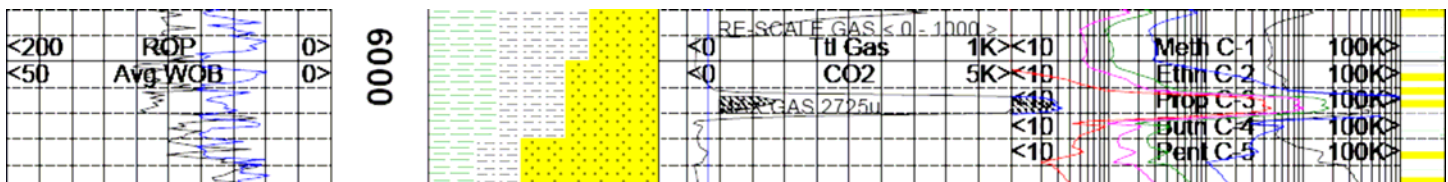
	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	193.621	2856.177	2725.190
Minimum	6.435	330.000	2.615
Mean	81.860	717.039	63.939
Standard Deviation	32.637	401.519	155.401



The first maximum gas show appeared upon entering the Wasatch I at 5887' and was 587 units.



There was a connection gas of 887 units at 6546'.



The high gas of the section was a formation gas of 2725 units was observed at 6018'.

Chromatography for this section was C – 5, 4, 3, 2, 1.

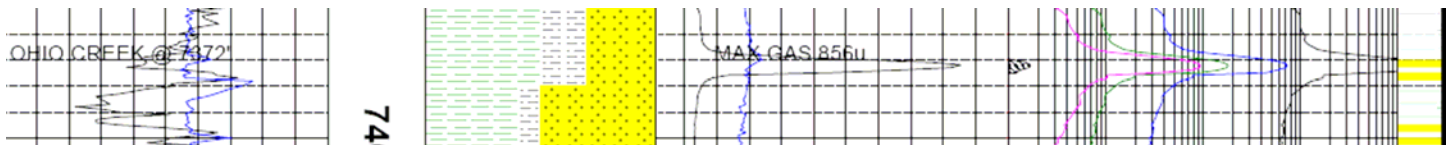
Ohio Creek Formation/950 Abandonment Surface

The Ohio Creek Formation top was encountered at 7372' MD and is considered to mark the boundary between the Tertiary Wasatch Formation and the Cretaceous Mesaverde Group. It is interpreted as an erosion surface and consists of a slightly to strongly kaolinitic sandstone where kaolinite occurs as a component in the matrix. A second sandstone unit encountered below the kaolinitic sandstone displays a general paucity of kaolinite and is characterized as a firm to hard, grain supported, dominantly quartz sandstone.

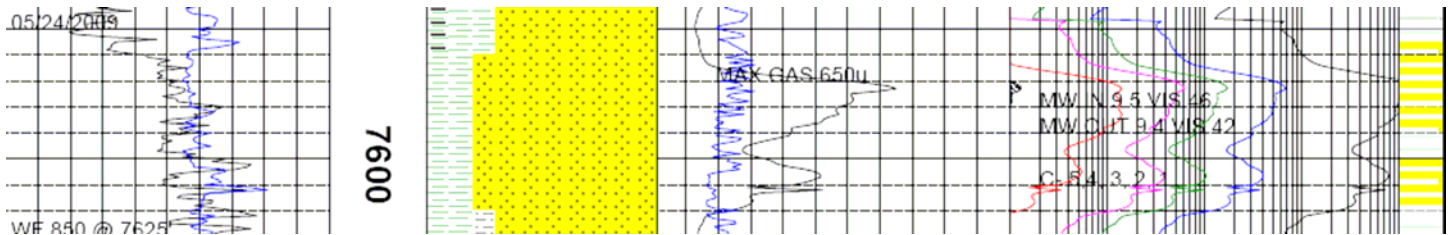
Relevant data concerning the Ohio Creek are presented as follows:

Ohio Creek Formation Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	160.557	1072.993	855.765
Minimum	33.080	330.000	3.067
Mean	93.689	691.551	125.686
Standard Deviation	29.130	189.594	155.074



The high gas of the section was a maximum gas of 856 units and occurred at 7372'



Another connection gas of 650 units was observed at 7573'.

Chromatography for the Ohio Creek Formation returned C-1 – C-5 gas through the drilled interval.

900 Sequence Boundary/Williams Fork 850

The 900 sequence boundary, marking the top of the Mesaverde Group and the Williams Fork 850 Formation occurred at 7625' MD. The Williams Fork 850 is dominated by sandstone, with lesser amounts of shale and siltstone. The sandstone encountered through this unit varies from grayish-white through grayish-green and dark gray and displays the following general characteristics:

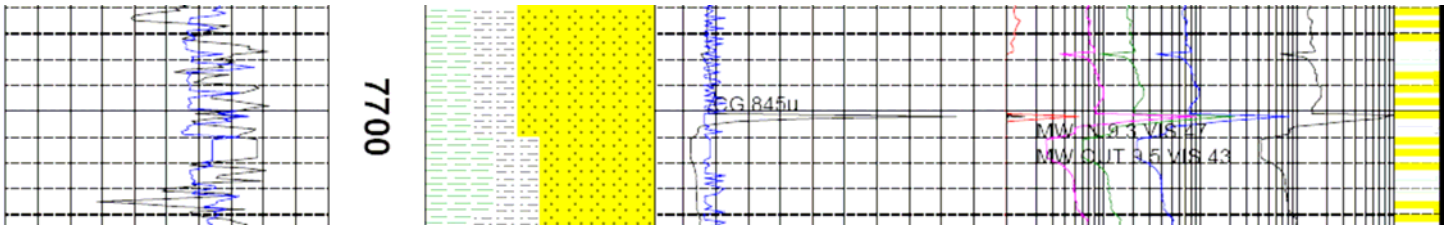
- Fine grained to very fine grained;
- Grain supported with carbonate-clay matrix;
- Surrounded to sub angular, clear to translucent quartz with moderate sphericity overall;
- Occasionally to commonly kaolinitic;
- Occasional dis-aggregation to loose sand grains in the sample tray.

The sandstones encountered in this unit are typical of other sandstones found throughout the entire Mesaverde Group section.

Rates of Penetration, Total Gas, and CO₂ data for the WF 850 are presented as follows:

Williams Fork 850 Formation Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	143.107	780.920	845.208
Minimum	0.000	0.000	0.000
Mean	58.222	412.333	59.361
Standard Deviation	29.896	201.914	72.120



The high gas of this section was a connection gas of 845 units at 7703'

Chromatography for the Williams Fork 850 Formation returned C-1 through C-4 during most of the drilled interval, with few instances of C-5.

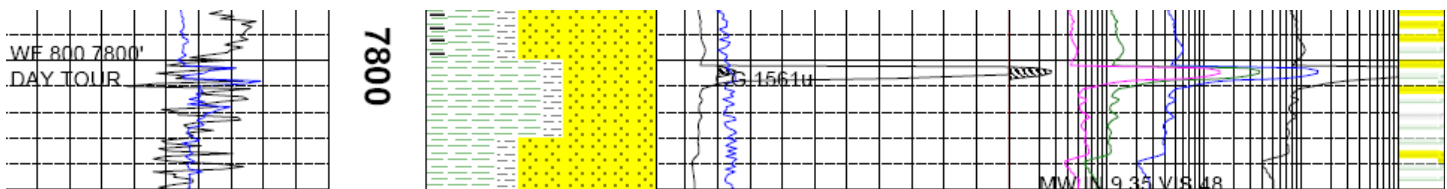
850 Abandonment Surface/Williams Fork 800

The 850 AS, which marks the top of the Williams Fork 800 was encountered at a depth of 7800' MD. A sandstone unit marks the upper contact along with an increase in drilling gases.

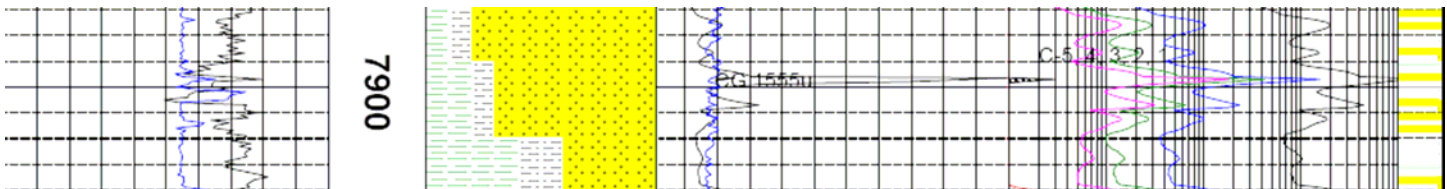
Relevant statistics for the WF 800 are listed below:

Williams Fork 800 Formation Statistics

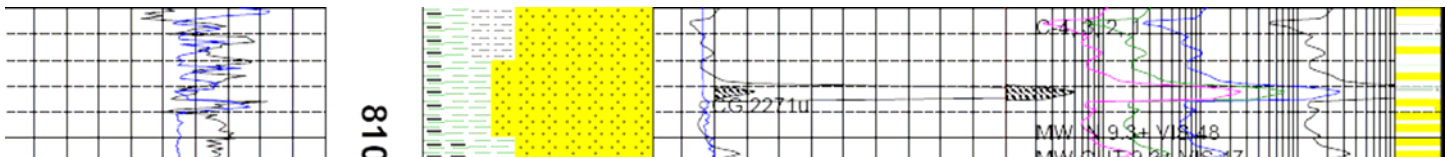
	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	124.206	1913.344	2271.004
Minimum	35.203	330.000	18.085
Mean	69.802	448.905	130.509
Standard Deviation	16.690	184.802	284.904



Upon entering the Williams fork 800 there was a connection gas of 1561 units at 7805'.



Another connection gas of 1555 units was observed at 7897'.



The high gas of the section was connection gas of 2271 units at 8082'.

Chromatography for the Williams Fork 800 Formation returned C-1 through C-5 for most of the drilled interval.

800 Sequence Boundary/Williams Fork 700

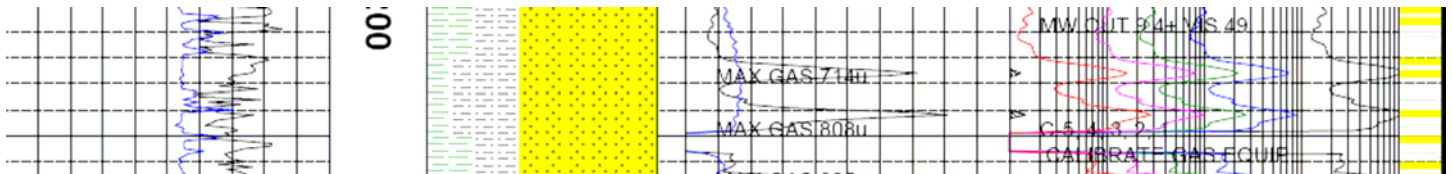
The 800 SB was encountered at 8155' MD. Like the Williams Fork 800, this sequence consists of dominantly sandstone with shale and siltstone interbedded down the section. The following features characterized the Shales that interbedded through this unit:

- Dark brown to dark gray color;
- Soft to slightly firm;
- Dull, earthy luster with occasional waxy zones;
- Occasionally silty zones.

Data for the WF 700 are summarized as follows:

Williams Fork 700 Formation Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	84.396	693.811	445.147
Minimum	21.834	330.000	79.787
Mean	62.262	458.972	138.418
Standard Deviation	15.529	107.105	70.914



The major gas shows of the Williams Fork 700 occurred at 8236' and 8242'. These shows were recorded at 714u and 808u.

The chromatography of this section was C-1 through C-5.

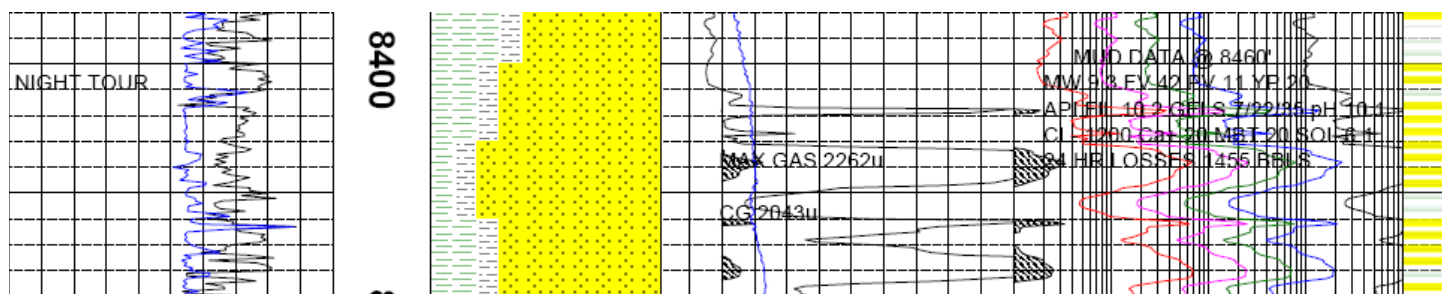
690 Abandonment Surface/Williams Fork 600

The 690 AS, marking the top of the Williams Fork 600 Member was encountered at 8275' MD. The WF 600 was logged as sandstone with significant amounts of shale and moderate amounts of siltstone and carbonaceous shale found throughout the formation samples.

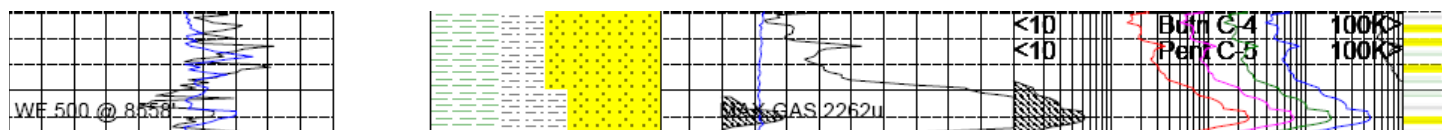
Relevant data for the WF 600 are summarized as follows:

Williams Fork 600 Formation Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	95.52	1072.993	2262.956
Minimum	22.54	396.613	47.176
Mean	59.96	707.242	264.912
Standard Deviation	12.728	224.789	418.501



A major gas show of the Williams Fork 600 was a connection gas at 8462' and was 2043 units.



The high maximum drilling gas was 2262 units at 8560'.

The chromatography for this section mostly exhibited C-1 through C-5 present in gas shows.

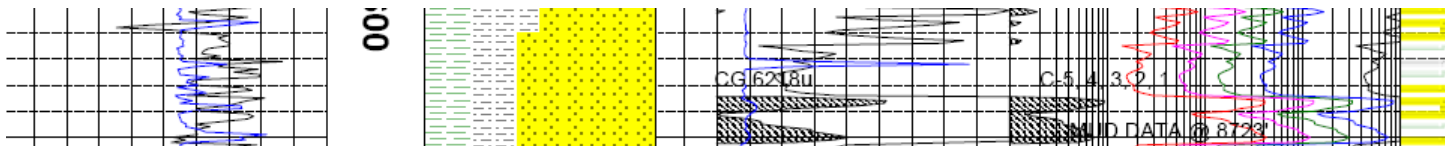
600 Sequence Boundary/Williams Fork 500

The Williams Fork 500 Formation occurred at a depth of 8558' MD. As with previous Williams Fork units, this unit is also dominated by sandstone.

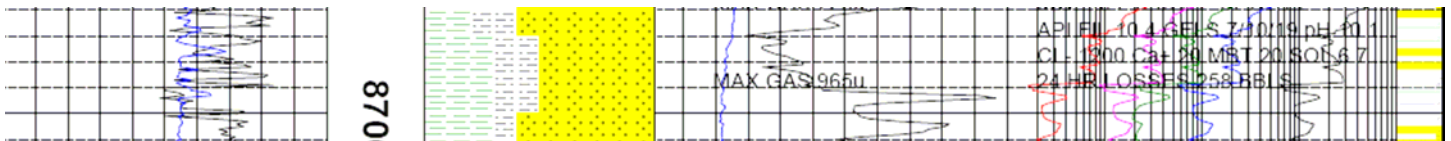
Data for the WF 500 are summarized as follows:

Williams Fork 500 Formation Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	129.079	4380.595	6217.683
Minimum	0.000	0.000	0.000
Mean	40.071	880.722	290.674
Standard Deviation	23.995	401.001	757.552



The first gas show of the Williams Fork 500 was at 8636' and was a connection gas of 6218 units.



A max gas of 965 units was recorded at 8664'.

Chromatography through the WF 500 displayed C-1 through C-5 gas shows.

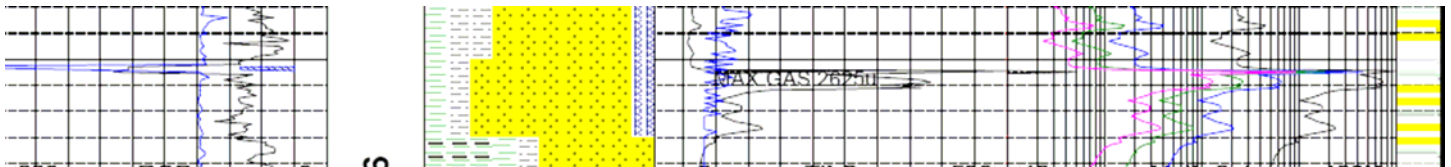
490 Abandonment Surface/ Williams Fork 400

The top of the Williams Fork 400 member was encountered at 9115' MD. Sandstone, kaolinitic sandstone, and shale are common through the WF400.

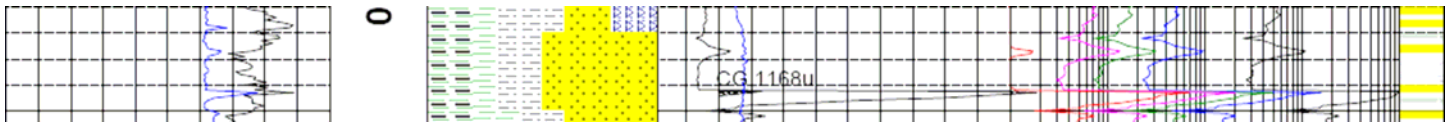
Data concerning the WF 400 are summarized as follows:

Williams Fork 400 Formation Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	131.728	1728.877	2625.023
Minimum	12.227	330.000	7.562
Mean	42.835	895.541	59.566
Standard Deviation	14.514	482.919	137.987



The max gas of the section occurred at 9455' and measured 2625 units.



Further down there was the highest connection gas of the section recording 1168 units at 9743'.

The chromatography of this section was C-1 through C-5.

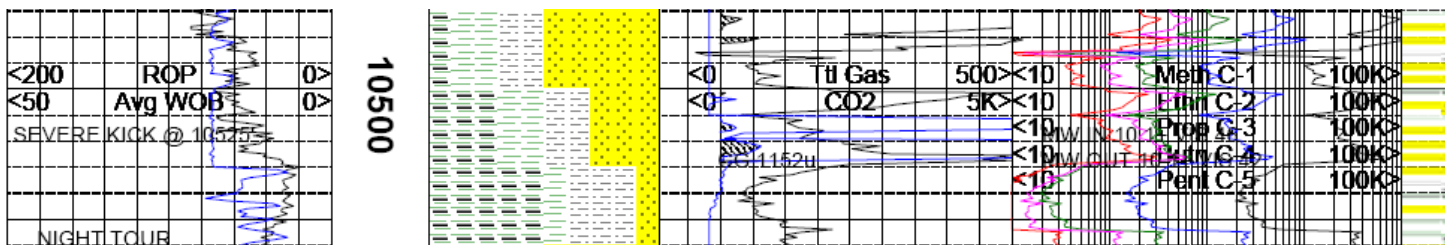
400 Sequence Boundary/ Williams Fork 300

The Williams Fork 300 member has an upper boundary of 9772' MD and is determined by the 400 SB. The WF300 generally features interbedded sandstone, shale, siltstone, and carbonaceous shale.

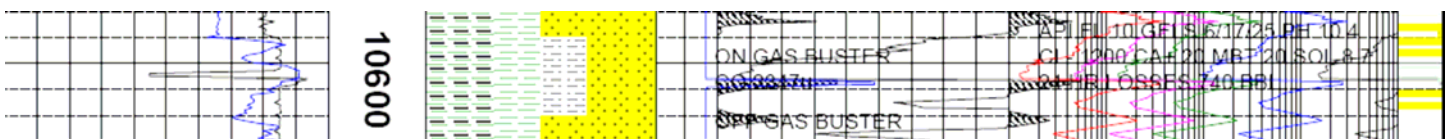
Data concerning the WF 300 are presented as follows:

Williams Fork 300 Formation Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	110.265	11341.674	2347.045
Minimum	12.743	330.000	7.092
Mean	47.218	496.940	180.321
Standard Deviation	12.260	866.765	254.580



A kick was experienced at 10522'. CO2 reached 11341 ppm. Total gas units are not accurately reflected due to well control techniques.



A connection gas of 2347 units at 10607' was recorded in the formation.

The chromatography of this section was C-1 through C-5 gas.

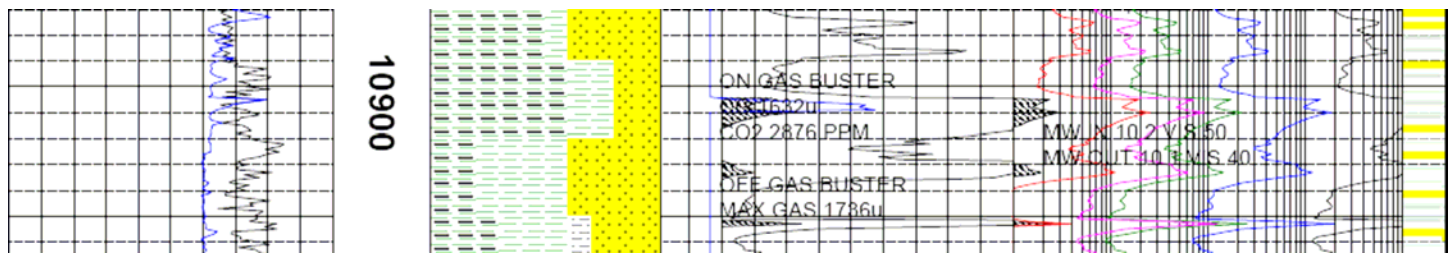
290 Abandonment Surface/ Williams Fork 200

The Williams Fork 200 member, whose top is marked by the 290 AS, was encountered at 10830' MD and encompasses interbedded sandstone, shale, carbonaceous shale, siltstone and coal.

Data for the WF 200 are summarized as follows:

Williams Fork 200 Formation Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	70.783	3340.404	2761.426
Minimum	29.787	330.000	29.146
Mean	51.249	373.564	344.969
Standard Deviation	9.287	320.610	365.078



Upon entering the Williams Fork 200 there was a max gas of 1736 units at 10952'.



The highest connection gas of the section was 2261 units at 11004' and was accompanied by 3340 ppm of CO2.

The chromatography of the section was C-1 through C-5 gas.

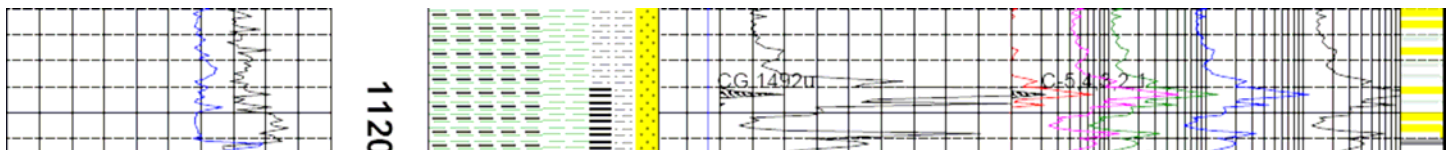
210 Sequence Boundary/Cameo Formation

The 210 SB, marking the top of the Cameo Formation, occurred at a depth of 11125' MD. The rocks of the Cameo Formation include sandstone, shale, and siltstone along with a significant number of coal units. ROP began to increase in short bursts as the brittle coal crumbled very easily.

Data for the Cameo Formation are summarized as follows:

Cameo Formation Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	70.031	330.000	1492.414
Minimum	25.917	330.000	63.168
Mean	53.829	330.000	226.973
Standard Deviation	10.151	0.000	208.007



Upon entering the Cameo there was a high connection gas of 1492 units at 11193'.



There was a max gas of 957 units at 11263' at the bottom of the section.

Chromatography through the Cameo Formation included C-1 through C-4 for the entire drilled interval.

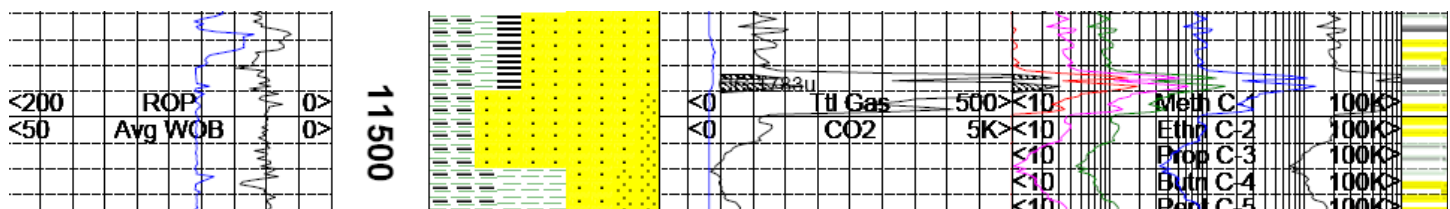
200 Sequence Boundary/Rollins Formation

The 200 SB occurred at 11432' MD and marks the top of the Rollins Formation. The top of the Rollins is dominated by thick, relatively clean looking quartz sandstone.

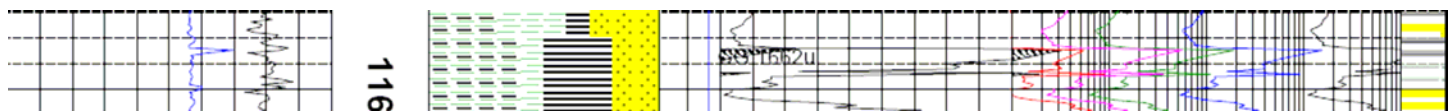
Data for the Rollins Formation are summarized as follows:

Rollins Formation Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	58.791	1728.877	1783.249
Minimum	20.768	330.000	35.051
Mean	39.599	343.235	208.030
Standard Deviation	6.482	101.817	268.288



The high recorded connection gas found at the top of the Rollins Formation was 1783 units at 11488'.



Another connection gas of 1662 units was observed at 11585'.

Chromatography for the section exhibited C-1 to C-5.

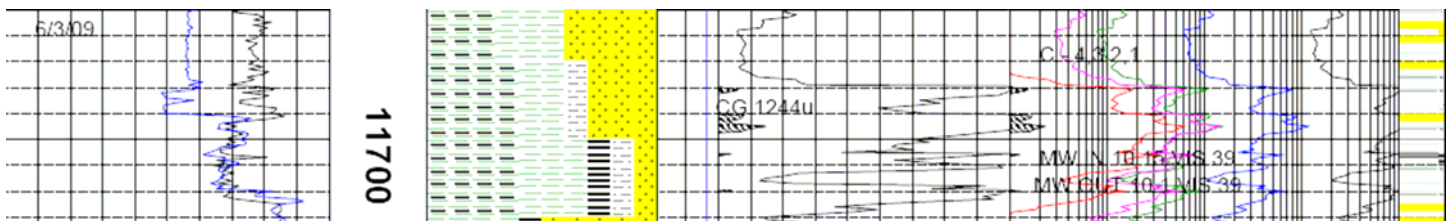
180 Flooding Surface/Cozzette Formation

The top of the Cozzette Formation, at 11625' MD is marked by the 180 FS. The Cozzette is predominately composed of poorly consolidated sandstone, carbonaceous shale, and siltstone.

Drilling and gas data for the Cozzette Formation are summarized as follows:

Cozzette Formation Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	71.552	330.000	4508.421
Minimum	12.857	330.000	75.606
Mean	41.515	330.000	451.916
Standard Deviation	13.552	0.000	563.184



Upon entering the Cozzette there was a connection gas of 1244 units at 11695'.



The high gas of the section was 4508 units and it occurred at 11895'.

Chromatography for the Cozzette Formation returned C-1 through C-5 for most of the drilled interval.

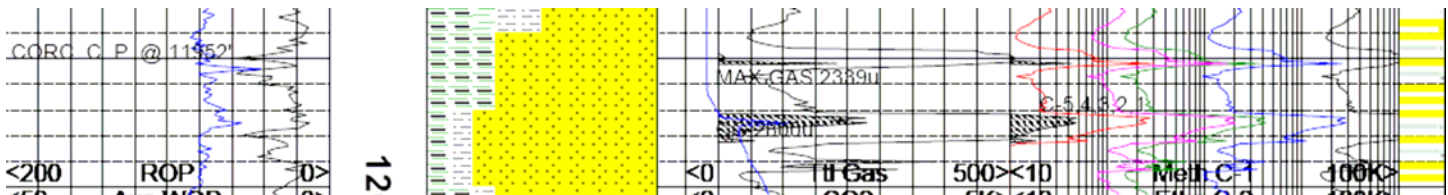
140 Flooding Surface/Corcoran Coastal Plain

The top of the Corcoran Coastal Plain, marked by the 140 Flooding Surface, was encountered at 11952' MD. This section encompasses a thick sequence of sandstone, shale, siltstone, and carbonaceous shale.

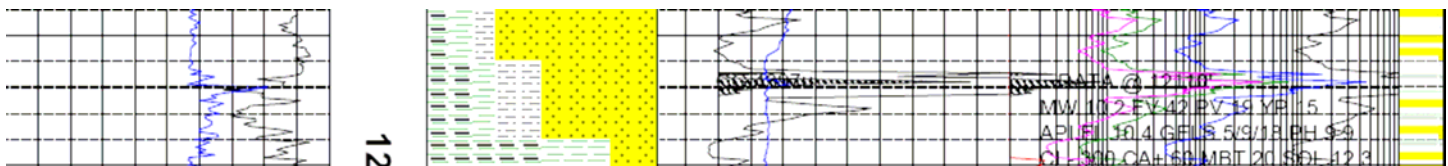
Drilling data for this section are summarized as follows:

Corcoran Coastal Plain Formation Statistics

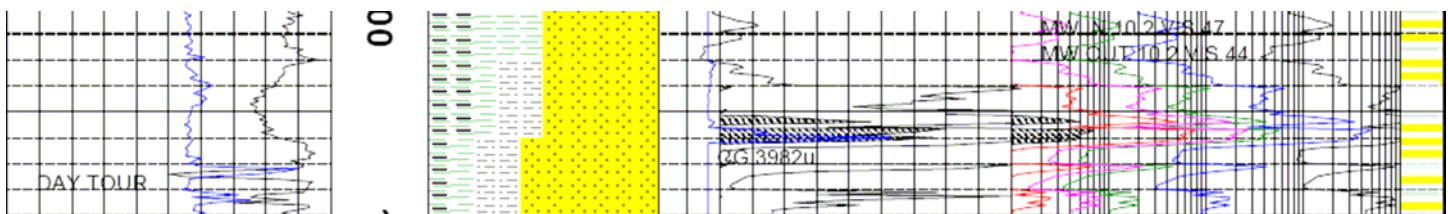
	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	99.740	3127.754	4397.470
Minimum	5.857	330.000	20.784
Mean	27.328	661.549	278.278
Standard Deviation	13.130	467.529	547.533



Upon entering the Corcoran Coastal Plain there was a maximum gas of 2389 units at 11952' followed by a connection gas of 2000 units at 11974'.



The high gas of the section was a connection gas of 4397 units at 12068'.



Another high connection gas was observed at 12356' and was 3982 units.

Chromatography for this section was C-1 to C-5 for most of the interval.

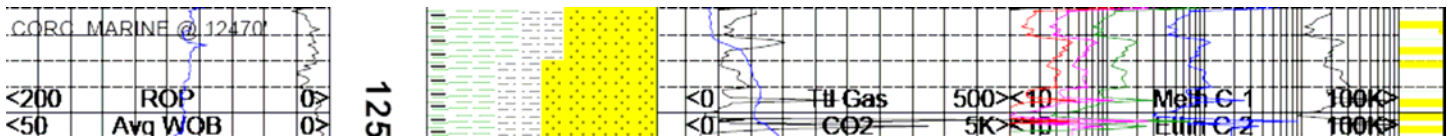
140 Sequence Boundary/Corcoran Marine Formation

The Corcoran Marine top was drilled at 12470' MD. This unit was composed dominantly of siltstone and sandstone with interbedded areas of shale and lesser amounts of carbonaceous shale present. The well was completed within the Corcoran Marine at a depth of 12043' MD.

Data for the Corcoran Marine are summarized as follows:

Corcoran Marine Formation Statistics

	ROP (Ft/Hr)	CO2 (ppm)	Total Gas (Units)
Maximum	20.131	1475.235	953.598
Minimum	3.243	406.861	21.934
Mean	9.626	1031.126	126.412
Standard Deviation	4.212	252.065	194.753



Upon entering the Corcoran Marine there was a formation gas of 953 units at 12504' associated with a significant ride in CO₂.

Chromatography for this section exhibited C-1 to C-5.

Other Data Plots

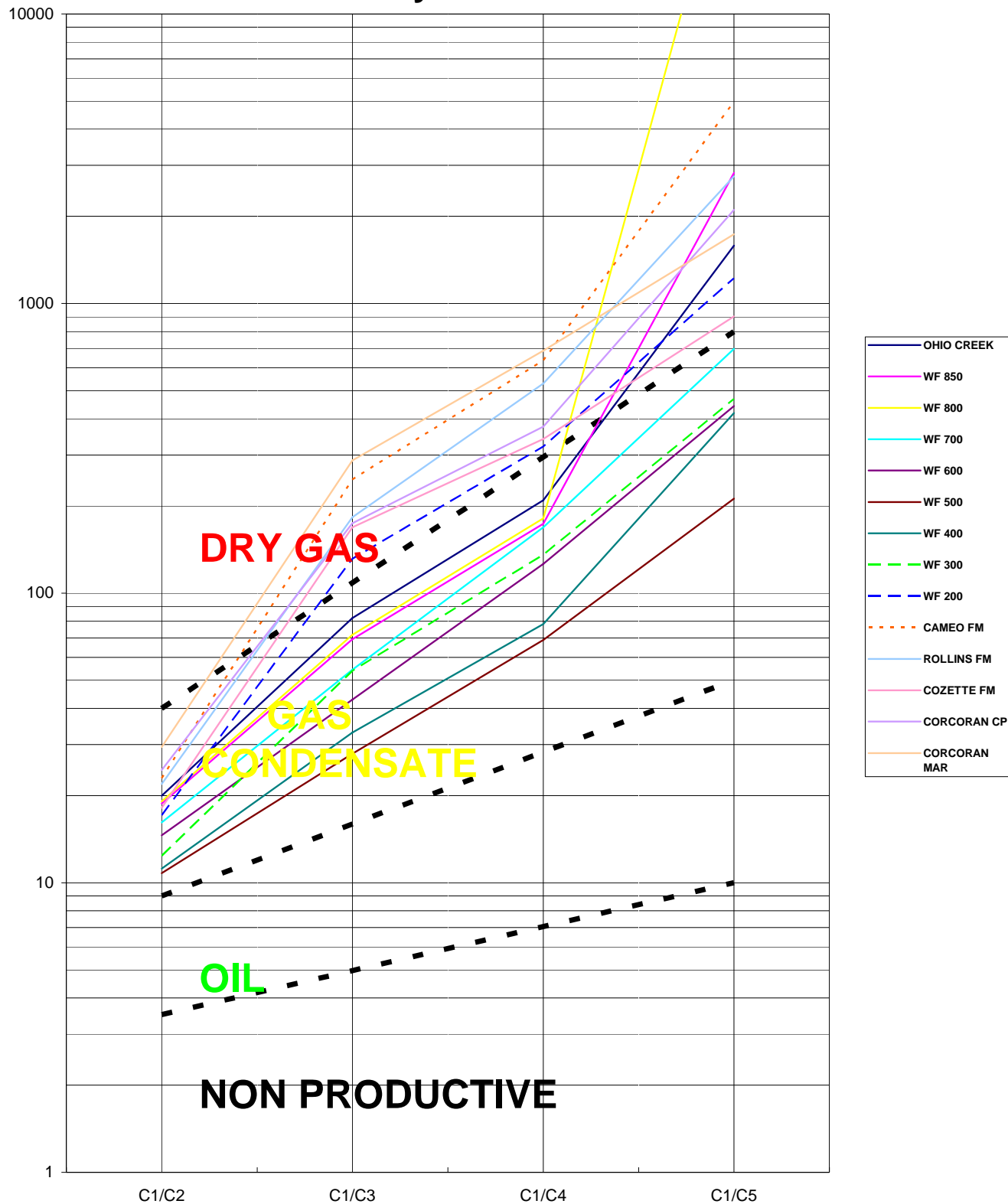
The following series of data plots summarize data concerning rate of penetration, total gas, and CO₂ as discussed in the above sections. Data are referenced to the formation top for each of the formations described above. The data are intended to illustrate general trends for each of these parameters relative to depth.

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Pixler Plot

FRU 197-33 A4

**Pixler Plot Of Average Chromatography
Data By Formation**



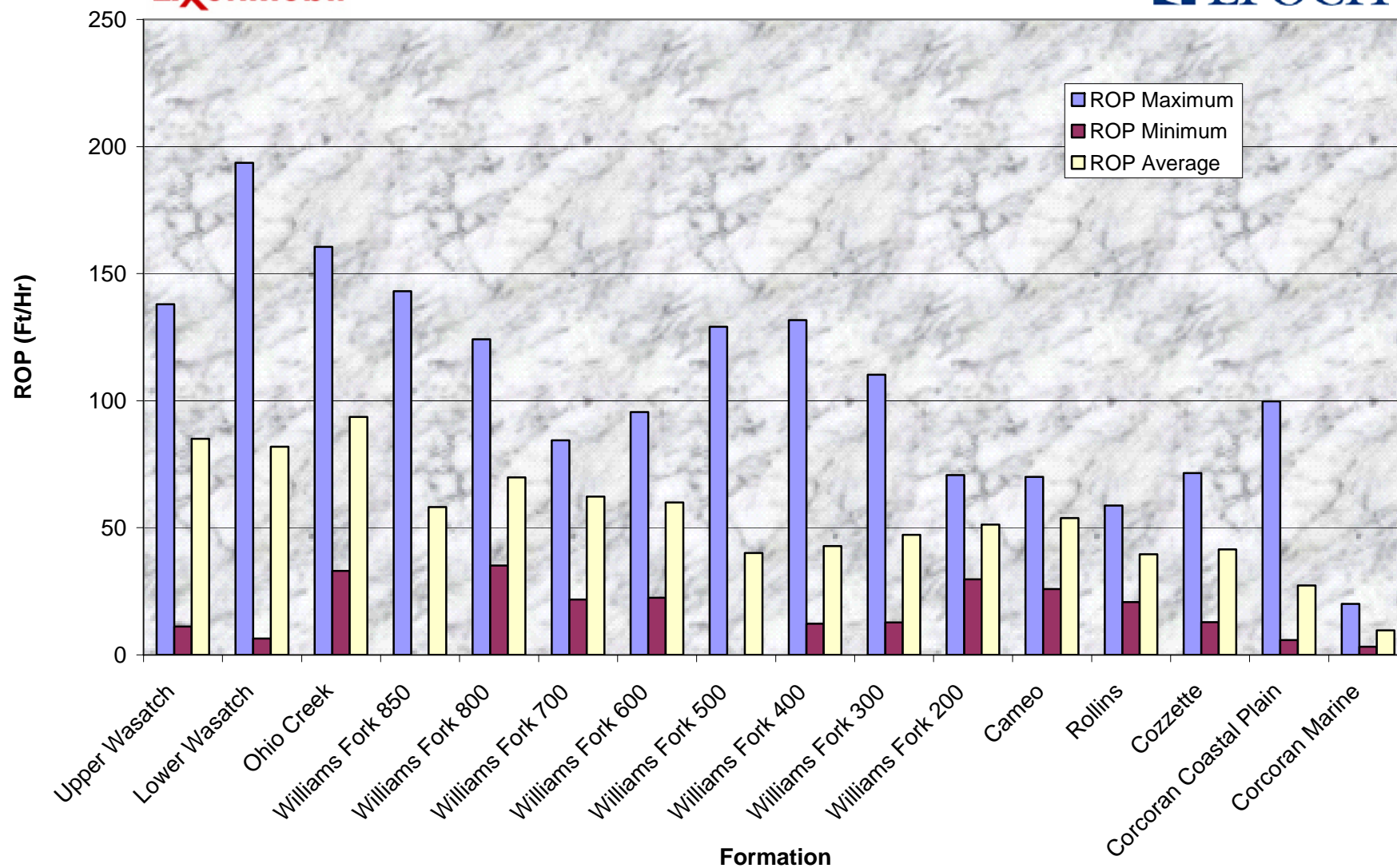
ExxonMobil

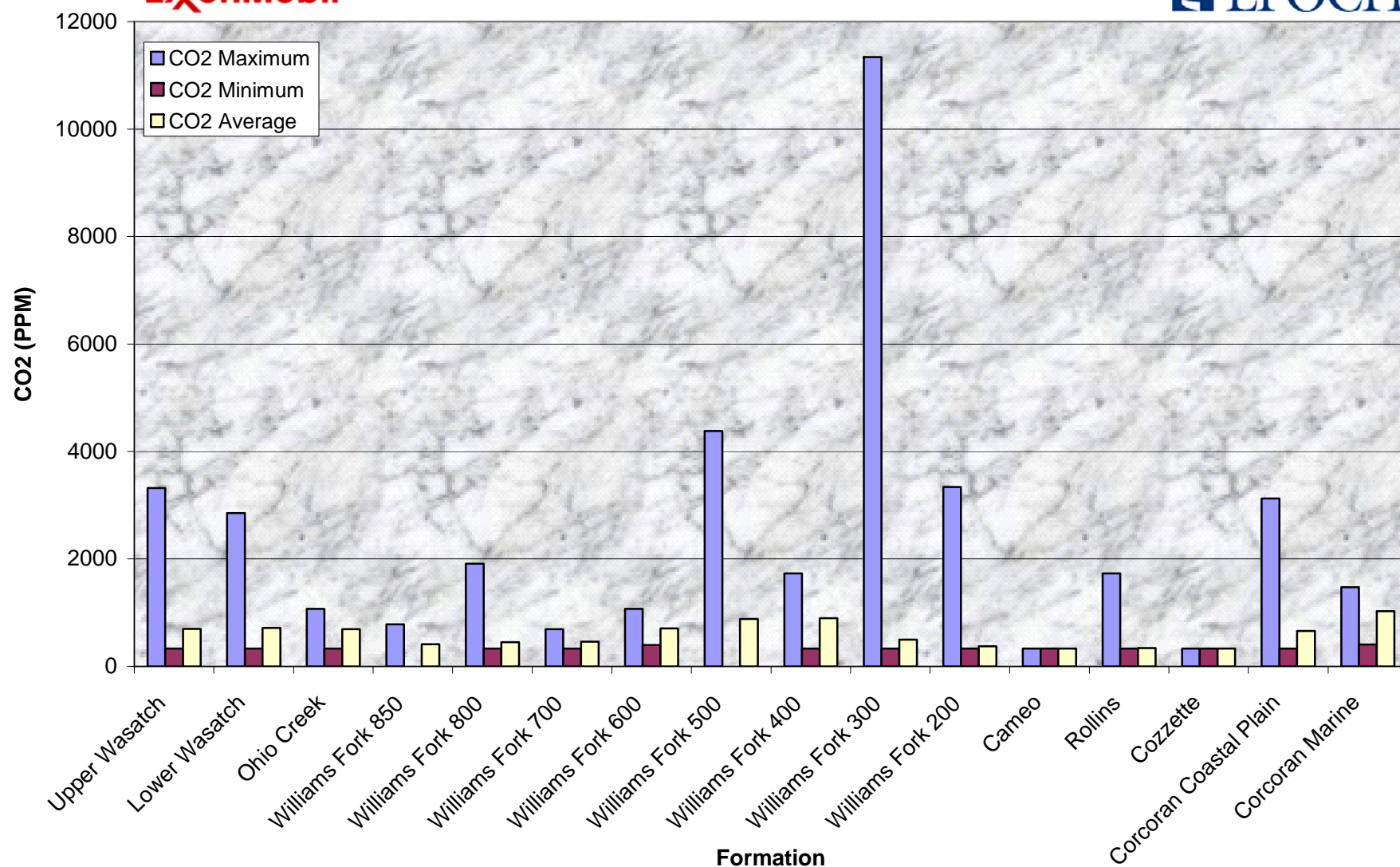
FRU 197-33A4

Other Data Plots



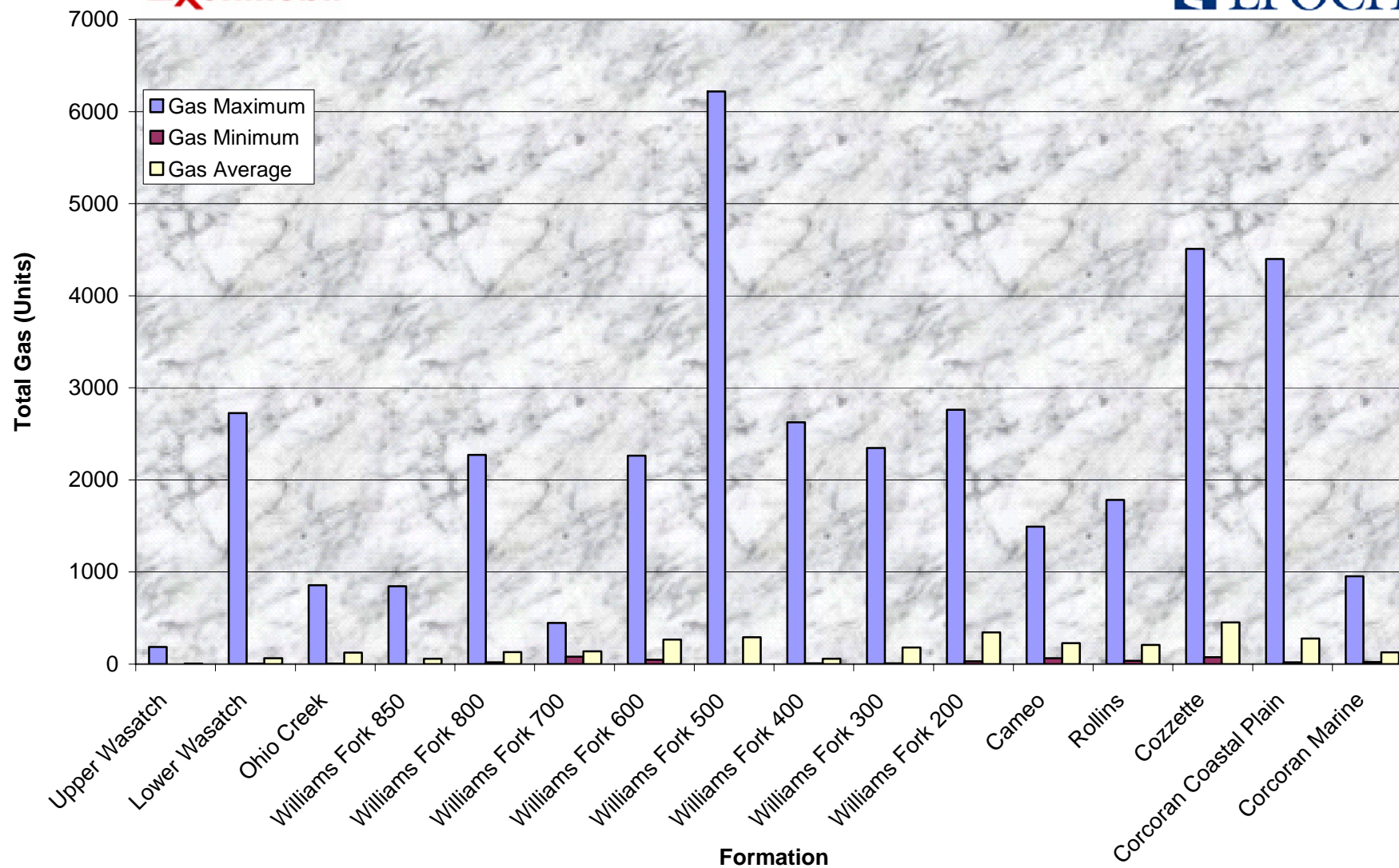
FRU 197-33A4
Rate of Penetration Statistics







FRU 197-33A4
Total Gas Statistics By Formation



ExxonMobil
FRU 197-33A4

Formation Descriptions

3870' Shale = dark yellow to light brown with some light blue fragments; crunchy to crumbly to occasionally brittle tenacity; planar to hackly to earthy fracture; scaly to tabular cuttings habit; earthy texture with waxy appearance when wet; smooth to gritty with occasionally silty grains present; thin to thick structure with irregular sizing of cuttings; cement very common at beginning of hole; rare pieces of light to dark purple claystone that appears very silty and gritty; no apparent hydrocarbon indicators present; overall non calcareous.

4020' Sandstone = light gray, clear, salt and pepper grains with dark lithics present; occasionally light blue and light pink quartz; moderately hard to hard; fine lower to medium and occasionally coarse grained upper; fair to poorly sorted; subrounded to rounded with some irregular quartz grains present; mainly silica cement with occasionally calcite crystals common; slightly calcareous; kaolinite sand very rare but present in samples; no oil indicators present.

4150' Shale = dark brown, tan, light blue, with some dark orange hues; crumbly to crunchy to occasionally brittle tenacity; earthy to occasionally splintery and hackly fracture; scaly to tabular cuttings habit; overall dull to earthy luster; gritty to silty to occasionally clayey texture; massive to lenticular structure; very well sorted shale nodules with occasionally traces of calcite and quartz fine grains throughout sample; non calcareous; no apparent hydrocarbon indicators.

4280' Sandstone = light gray to dark yellowish orange color; very fine grained; well sorted; subrounded grains with moderate sphericity; light gray cuttings are grain supported, dark yellowish orange cuttings are mud matrix supported; firm to friable cuttings; fair reaction with 10% HCl.

4370' Shale = pale blue to dark yellowish orange color; crumbly to brittle tenacity; splintery to hackly to earthy fracture; wedgelike to nodular cuttings habit; earthy to waxy luster; clayey to smooth texture; trace of laminae on some surfaces of cuttings; fair reaction with

4450' Siltstone = moderate yellowish brown color; dense to brittle tenacity; blocky fracture; nodular cuttings habit; earthy luster; silty to gritty texture; massive structure; slight reaction with 10% HCl; grading into sand stone;

4520' Sandstone = moderate yellowish brown to moderate brown to olive gray to grayish red purple color; very fine to fine grained; fair to poor sorting; subangular to subround grains; moderate to low sphericity; friable; matrix supported with salt and pepper grains; slight reaction with HCl; under uv light no fluorescence.

4620' Shale = dark yellowish orange to medium bluish color; brittle to dense to tough tenacity; earthy to splintery to conchoidal fracture; wedgelike to nodular to bladed cuttings habit; earthy to waxy luster; clayey to smooth texture; trace of silt on surface of the cuttings.

4710' Sandstone = grayish red to grayish orange color; fine to very fine grain size; fair sorting; subangular grains; moderate sphericity; firmly friable; matrix supported; less than 2% dark lithics; predominantly quartz grains, clear to grayish red to milky white color; fair reaction with 10% HCl; no hydrocarbon fluorescence under uv light.

4820' Siltstone = moderate yellowish brown color; brittle to dense tenacity; blocky fracture; nodular cuttings habit; earthy luster; silty to gritty texture, grading into sandstone; predominantly massive with trace of laminae visible; slight reaction in HCl.

4900' Shale = grayish orange to medium blue color; dense to tough to brittle tenacity; blocky to conchoidal to hackly fracture; nodular to wedgelike to bladed cuttings habit; earthy to dull to waxy luster; clayey to silty texture; massive structure; slight reaction with HCl.

4980' Shale = medium blue to moderate yellowish brown color; dense to brittle tenacity; conchoidal to hackly to earthy fracture; wedgelike to bladed to nodular cuttings habit; smooth to clayey texture; waxy to earthy luster; coating of silt on some of the shale cuttings; no reaction with HCl.

5070' Shale = grayish orange to light bluish color; tough to brittle to crunchy tenacity; hackly to irregular fracture; wedgelike to nodular to occasionally bladed cuttings habit; smooth to silty to occasionally clayey texture; earthy to dull to occasionally greasy luster; sandy cement clusters found scattered throughout samples; non to slightly calcareous; no apparent hydrocarbon indicators present.

5180' Sandstone = light gray to dark gray with dark greenish hues and dark lithics; very fine to fine to occasionally medium grained; very well to well sorted; subrounded to rounded with subangular quartz grains throughout sample; moderate sphericity; mainly silica cementation with clear to pinkish crystals common; overall non to slightly calcareous; no apparent oil indicators present.

5290' Shale = dark gray to yellowish brown with light blue grains throughout; brittle to crumbly to occasionally tough tenacity; irregular to planar to occasionally splintery fracture; tabular to scaly to occasionally platy cuttings habit; very earthy to dull luster; texture is overall smooth with clayey properties when broken into smaller pieces; structure is thin to occasionally thick and massive; overall non calcareous with some visible signs of kaolinite banded sand particles within the sample matrix.

5430' Sandstone = light gray to off white with dark greenish hues and dark lithics; very fine to fine to occasionally coarse grained; very well to well sorted; subrounded to rounded with subangular quartz grains throughout sample; moderate sphericity; mainly silica cementation with clear to white crystals common; overall non to slightly calcareous; no apparent oil indicators present.

5540' Shale = gray to dark reddish brown with some light blue grains throughout; brittle to crumbly to occasionally tough tenacity; irregular to planar to occasionally splintery fracture; tabular to scaly to occasionally platy cuttings habit; very earthy to dull luster; texture is overall smooth with clayey properties when broken into smaller pieces; structure is thin to occasionally thick and massive; overall non calcareous with some visible signs of quartz banded sand grains within the sample matrix.

5680' Sandstone = very light gray to medium light gray color; fine grain size; fair sorting; subangular to subrounded grains; moderate sphericity; grain supported with calcite cement; firm hardness; quartz grains with some light colored lithic fragments; reacts well with 10% HCl; trace of yellow fluorescence under uv light of some sand cuttings in sample taken at 5700'.

5790' Shale = medium bluish to moderate yellowish brown to medium dark gray color; crumbly to brittle tenacity; splintery to hackly fracture; nodular to wedgelike to bladed cuttings habit; waxy to dull luster; smooth to clayey texture; massive structure; light reaction to no reaction in HCl.

5880' Sandstone = medium light gray to light gray color; very fine to fine grained; well to fair sorting; subround to subangular grains with moderate sphericity; firmly friable to firm; less than 2% dark lithic fragments; some calcite some silica cementation, fair to poor reaction in HCl; ground surfaces due to pdc bit; trace amount of pyrite; sandstone no fluorescence under uv.

5990' Siltstone = brownish gray to medium dark gray color; dense tenacity; blocky fracture; nodular to tabular cuttings habit; dull luster; silty texture; trace of calcite filled micro fractures seen in some cuttings; reacts fair to well with 10% HCl.

6070' Shale = grayish brown color; dense tenacity; splintery to hackly fracture; bladed to wedgelike cuttings habit; dull to sparkling luster; silty to clayey texture; trace of pyrite; trace reaction with HCl.

6170' Siltstone = brownish gray color; dense to crunchy tenacity; blocky fracture; tabular to nodular cuttings habit; dull luster; silty texture; massive structure; slight reaction with 10% HCl.

6230' Carbonaceous Shale = brownish black to black color; dense tenacity; splintery to irregular fracture; nodular to wedgelike cuttings; greasy luster; smooth to silty texture trace of laminae.

6290' Coal = black; dense to tough tenacity; blocky to conchoidal fracture; tabular to nodular cuttings habit; greasy luster smooth texture; trace laminae in places; visible degassing under microscope when wet; cavings of coal common when pipe got stuck at 6322' MD.

6370' Sandstone = light gray to salt and pepper to translucent and white; very fine to fine lower to medium and occasionally coarse grained upper; well sorted; subrounded to subangular grains; moderate sphericity; moderately hard to hard; overall moderately to very calcareous; dark brown to black lithics very common throughout grains; < 5% coal fragments with visible degassing common in samples; no apparent hydrocarbon indicators present.

6500' Siltstone = light bluish to medium gray to occasionally brownish gray; very tough to dense tenacity; blocky to irregular fracture; massive to tabular cuttings habit; waxy to dull to occasionally earthy luster; very silty and gritty texture; thick to massively structured; moderately hard to hard fragments; overall non calcareous with sparkly interbedded minerals found on outer portion of grains when dried.

6620' Sandstone = light gray to salt and pepper to translucent and white; very fine to fine lower to medium and occasionally coarse grained upper; well sorted; subrounded to well rounded grains; moderate sphericity; moderately hard to hard; overall moderately to very calcareous; dark brown to black lithics in samples; no apparent hydrocarbon indicators present.

6730' Shale = dark yellowish orange to pale yellowish orange to light olive gray to dark yellowish brown color; brittle to crumbly to tough tenacity; nodular to wedgelike cuttings habit; earthy to dull luster; clayey to silty texture; massive structure; no reaction to fair reaction with 10% HCl.

6820' Siltstone = light gray to light brownish gray color; dense tenacity; irregular to hackly fracture; nodular to wedgelike cuttings habit; dull luster; silty to gritty texture; massive structure; fair reaction with HCl.

6890' Sandstone = light gray color; fine grain size; well sorted; subrounded grains; moderate sphericity; firm hardness; grain supported with calcite cementation; less than 2% dark colored lithics; predominantly foggy and some clear quartz grains; reaction fair to well with HCl; no fluorescence under uv light.

6990' Shale = medium bluish to medium gray color; dense to brittle tenacity; irregular to splintery fracture; nodular to wedgelike cuttings habit; waxy to dull luster; silty to smooth texture; massive structure; no reaction in HCl.

7060' Sandstone = off white to opaque with pale blue hues; very fine to fine lower to medium and occasionally coarse grained upper; well to fairly sorted; subrounded to rounded with some angular grains due to pdc bit action; moderate sphericity; moderately hard to occasionally hard; slightly to moderately calcareous; dark brown to black lithics common within quartz framework; slight mechanical abrasion with impaction due to bit; no apparent hydrocarbon indicators.

7190' Shale = medium bluish gray to medium gray with occasionally dark reddish brown hues; very brittle to dense tenacity; blocky to irregular fracture; tabular to wedgelike to occasionally nodular cuttings habit; dull to earthy to rarely waxy luster; smooth to silty texture with clayey properties when broken into smaller pieces; overall thick to massive structure; non calcareous; traces of small pyrite fragments in samples.

7310' Sandstone = off white to clear with pale blue hues; very fine to fine lower to medium and occasionally coarse grained upper; well to fairly sorted; subrounded to rounded with some angular grains present moderately hard to occasionally hard; slightly to moderately calcareous; dark brown to black lithics common within quartz framework; slight mechanical abrasion with impaction due to bit; no apparent hydrocarbon indicators; pyrite nodules common at Ohio Creek fm contact.

7440' Shale = medium bluish gray to medium gray with occasionally dark reddish brown hues; very brittle to dense tenacity; blocky to irregular fracture; tabular to wedgelike to occasionally nodular cuttings habit; dull to earthy to rarely waxy luster; smooth to silty texture with crunchy properties when broken into smaller pieces; overall thick to massive structure; non calcareous; traces of carbonaceous shale and calcite crystals found throughout samples.

7570' Sandstone = off white to clear with pale gray blue hues; very fine to fine lower to medium and occasionally coarse grained upper; well to fairly sorted; subrounded to rounded with some angular grains present moderately hard to occasionally hard; slightly to moderately calcareous; dark gray to black lithics common within quartz framework; some mechanical abrasion with impaction due to bit; no apparent hydrocarbon indicators; shale nodules are platy and common within samples; very clean well consolidated quartz sand with no visible porosity.

7720' Siltstone = medium to dark gray with occasionally dusky brown hues; very tough to dense tenacity; blocky to irregular fracture; tabular to wedgelike cuttings habit with some elongated fragments; very dull to earthy luster; very silty to clayey texture; thick to occasionally thin structure; hard to break into pieces but flakes off in a clay-like fashion when poked with metal tool; overall non calcareous.

7830' Shale = medium bluish to pale blue color; brittle to dense tenacity; splintery to hackly fracture; wedgelike to nodular cuttings habit; waxy luster; smooth texture; massive structure; no reaction with 10% HCl.

7900' Sandstone = light gray to very light gray color; medium to fine grained; poor to fair sorting; subrounded grains with moderate sphericity; friable, loose grains in tray due to pdc bit, predominantly small cuttings of less than 1mm in size; foggy quartz grains with some clear; less than 2% dark lithics; some calcite cementation, reacts well with HCl; no fluorescence under uv light

8010' Shale = light bluish to light brownish to pinkish gray color; dense to tough tenacity; irregular fracture; wedgelike to platy cuttings habit; waxy to dull luster; silty texture; massive structure; no reaction with HCl; small cuttings size of less than 1 mm.

8090' Sandstone = light gray color; fine to medium grain size; poor to fair sorting; subround grains with moderate sphericity; friable to firmly friable; grain supported; quartz grains are clear to foggy; less than 2% dark lithics in most cuttings 5% lithic in some cuttings; slight to no reaction with HCl; no fluorescence under uv light.

8190' Siltstone = pale brown to brownish gray color; dense tenacity; irregular to blocky fracture; nodular to wedgelike cuttings habit; earthy to sparkling luster; silty to gritty texture; massive structure; trace reaction with HCl.

8260' Shale = light bluish to pale yellow brown color; dense tenacity; irregular fracture; wedgelike to nodular to bladed cuttings habit; waxy to dull luster; smooth texture; massive structure; no reaction in HCl.

8330' Sandstone = light gray to very light gray color; fine to very fine grain size; fair sorting; subround to sub-angular grains; quartz grains with less than 2% dark lithics; firm friable; grain supported; slight reaction with HCl; no fluorescence under uv light; ground surfaces due to pdc bit.

8420' Siltstone = medium bluish gray to occasionally dark reddish brown; very dense to brittle tenacity; irregular to blocky to earthy fracture; tabular to wedgelike cuttings habit; earthy to dull to occasionally greasy luster; smooth to very silty texture; overall thick to massive structure; non calcareous; traces of pinpoint pyrite common in samples.

8520' Shale = light bluish to pale yellow brown color; dense tenacity; irregular fracture; wedgelike to nodular to bladed cuttings habit; earthy to dull luster; smooth texture; massive to thick structure; no reaction with HCl.

8590' Sandstone = off white to clear with pale gray blue hues; very fine to fine lower to medium and occasionally coarse grained upper; well to fairly sorted; subrounded to rounded with some angular grains present moderately hard to friable; slightly to moderately calcareous; dark gray to black lithics common within quartz; no hydrocarbon indicators; shale nodules are platy and common within samples.

8730' Sandstone = opaque, off white, clear, light greenish gray hues; very fine to fine grained; subangular to subrounded; overall hard quartz sand; kaolinitic sand grains very common; overall fine silica cementation; very well sorted with no visible porosity; very clean and compacted sand grains when wet; non to slightly calcareous with dark brown siltstone fragments common; no apparent oil indicators present.

8850' Siltstone = bluish gray to slightly dark reddish brown; very dense to brittle tenacity; irregular to blocky to earthy fracture; tabular to wedgelike cuttings habit; earthy to dull to occasionally greasy luster; smooth to very silty texture; overall thick to massive structure; non calcareous.

8940' Shale = light gray to dark gray to black; brittle to crumbly tenacity; planar to blocky to irregular fracture; platy to scaly to wedge-like to bladed cuttings habit; earthy to dull to slightly waxy luster; generally smooth texture; massive structure.

9020' Sandstone = color varies from gray to white to occasionally translucent; fine to medium grain size; fair to well sorted grains; round to sub-round to sub-angular grains with low to moderate sphericity; sample is friable to moderately hard; although slightly reactive to HCl solution; predominantly silica cement; sample also contains brown and black lithic fragments which comprise two to three percent of sample.

9150' Siltstone = bluish gray to slightly dark reddish brown; very dense to brittle tenacity; irregular to blocky to earthy fracture; tabular to wedgelike cuttings habit; earthy to dull to occasionally greasy luster; smooth to very silty texture; overall thick to massive structure; non calcareous.

9240' Sandstone = off white to very light gray to occasionally translucent with a salt/pepper appearance; fine to occasionally very fine lower to medium and occasionally coarse upper grained; subangular to subrounded; moderate sphericity; moderately friable to hard; dark brown to black lithics common; well consolidated clean quartz sand; slightly to mod calcareous; no fluorescence.

9370' Shale = light gray to dark gray to black with light bluish gray hues; wedged to blocky to irregular fracture; platy to scaly to tabular to bladed cuttings habit; very earthy to dull luster; non calcareous with a smooth to silty texture; cavings common from up hole washing down during trip.

9460' Carbonaceous Shale = dark brown to reddish brown to black; dense to brittle tenacity; irregular to blocky fracture; generally massive cuttings habit; earthy to dull to occasionally greasy luster; massive structure with occasional stringers of carbonaceous material.

9550' Sandstone = color varies from gray to white to occasionally translucent; fine to medium grain size; fair to well sorted grains; round to sub-round to sub-angular grains with low to moderate sphericity; sample is friable to firm friable; calcite cement; sample is reactive to HCl solution; no visible fluorescents under uv light.

9650' Shale = light gray to dark gray to black; brittle to crumbly tenacity; planar to blocky to irregular fracture; platy to scaly to wedge-like to bladed cuttings habit; earthy to dull to slightly waxy luster; generally smooth texture; massive structure.

9730' Carbonaceous Shale = dark brown to reddish brown to black; dense to brittle tenacity; irregular to blocky fracture; generally massive cuttings habit; earthy to dull to occasionally greasy luster; massive structure with occasional black stringers; degassing of sample is also visible.

9820' Siltstone = medium bluish gray to occasionally dark reddish brown; very dense to brittle tenacity; irregular to blocky to earthy fracture; tabular to wedgelike cuttings habit; earthy to dull to occasionally greasy luster; smooth to very silty texture; overall thick to massive structure; non calcareous; traces of pinpoint pyrite common in samples.

9920' Sandstone = off white to very light gray to occasionally translucent with a salt/pepper appearance; fine to occasionally very fine lower to medium and occasionally coarse upper grained; subangular to subrounded; moderate sphericity; moderately friable to hard; dark brown to black lithics common; well consolidated clean quartz sand; slightly to mod calcareous; no fluorescence.

10020' Shale = gray to light gray to dark gray in color with low to very low sphericity; crumbly to crunchy tenacity with irregular to planar fractures; scaly to tabular ctgs habit with a dull to earthy luster ; smooth to silty texture.

10090' Carbonaceous Shale = dark gray to dark brown in color brittle to crumbly tenacity with tabular to wedgelike ctgs habit; vitreous to resinous luster with a silty to abrasive texture.

10150' Sandstone = off-white to gray in color with a calcite framework; medium to coarse framework with fair to well sorting; subround to subangular angularity with moderate to high sphericity; brittle to crumbly tenacity with hackly to mottled fractures; nodular to equant ctgs habit with a frosted to dull luster; gritty to granular texture.

10260' Siltstone = gray to brown in color with low to very low sphericity; crunchy to pulverant tenacity with scaly to wedgelike ctgs habit; dull to earthy luster with a smooth to silty texture.

10320' Carbonaceous Shale = dark gray to dark brown in color with brittle to dense tenacity; elongated to tabular ctgs habit with a resinous to dull luster; silty to abrasive texture,

10380' Carbonaceous Shale = dark brown to reddish brown to black; dense to brittle tenacity; irregular to blocky fracture; generally massive cuttings habit; earthy to dull to occasionally greasy luster; massive structure with occasional black stringers; degassing of sample is also visible.

10470' Sandstone = off-white to light gray in color with medium to coarse grain size; calcitic frame work with fair to well sorting; subround to subangular angularity; moderate to high sphericity with dense to brittle tenacity; equant to nodular ctgs habit with a waxy to frosted luster; gritty to granular texture with 20% black lithics.

10570' Shale = dark gray to brown in color with brittle to crumbly tenacity; irregular to planar fractures with scaly to tabular ctgs habit; dull to earthy luster with a smooth to silty texture.

10640' Carbonaceous Shale = dark brown to dark gray in color with dense to brittle tenacity; scaly to wedgelike ctgs habit with a resinous to slightly vitreous luster; silty to slightly gritty texture with degassing occurring within the sample.

10720' Siltstone = light gray to tan in color with moderate to low sphericity; crumbly to crunchy tenacity with elongated to nodular ctgs habit; dull to earthy luster with a smooth to silty texture.

10780' Sandstone = gray to off-white in color with a calcitic framework; medium to fine grain size with well to very well sorting; subround to subangular angularity; moderate to high sphericity with dense to brittle tenacity; nodular to elongated ctgs habit with a waxy to dull luster; gritty to granular texture with 30% black lithics.

10880' Carbonaceous Shale = black to dark brown in color with dense to brittle tenacity; planar to irregular fractures with a tabular to wedgelike ctgs habit; vitreous to dull luster with a silty to abrasive texture; accessory mineral pyrite was present within sample; sample was also degassing.

10970' Siltstone = medium bluish gray to occasionally dark reddish brown; very dense to brittle tenacity; irregular to blocky to earthy fracture; tabular to wedgelike cuttings habit; earthy to dull to occasionally greasy luster; smooth to very silty texture; overall thick to massive structure; non calcareous; traces of pinpoint pyrite common in samples.

11070' Sandstone = color varies from gray to white to occasionally translucent; fine to medium grain size; fair to well sorted grains; round to sub-round to sub-angular grains with low to moderate sphericity; sample is friable to firm friable; calcite cement; sample is reactive to HCl solution; no visible fluorescents under uv light.

11170' Carbonaceous Shale = dark brown to reddish brown to black; dense to brittle tenacity; irregular to blocky fracture; generally massive cuttings habit; earthy to dull to occasionally greasy luster; massive structure with occasional black stringers; degassing of sample is also visible.

11260' Shale = color varies from gray to dark gray to black; sample is brittle to crumbly with blocky to planar to occasionally irregular fracture; cuttings habits are platy to scaly to wedge-like to bladed; generally earthy to dull luster; smooth to slightly clayey texture; overall massive structure with occasional black stringers of carbonaceous material.

11380' Coal = black in color with dense to brittle tenacity; blocky to planar fractures with tabular to wedgelike ctgs habit; vitreous to resinous luster with a crystalline to matte texture; degassing occurred within the sample.

11450' Sand/Sandstone = opaque to slightly tan in color with a calcitic framework; fine to medium grain size with fair to very well sorting; round to subround angularity with moderate to high sphericity; 90% unconsolidated with brittle to crumbly tenacity; nodular to elongated ctgs habit with a frosted to polished luster; gritty to granular texture.

11560' Carbonaceous Shale = dark brown to silver in color with a dense to brittle tenacity; elongated to wedgelike ctgs habit with a metallic to resinous luster smooth to silty texture with degassing occurring within the sample; also accessory mineral pyrite was present.

11650' Shale = gray to dark gray in color with a brittle to crumbly tenacity; tabular to wedgelike ctgs habit with dull to earthy luster; smooth to silty texture.

11710' Sandstone = gray to brown in color with fine to medium grain size; quartz framework with well to very well sorting; moderate to high sphericity with tough to dense tenacity; elongated to nodular ctgs habit with a dull to earthy luster; gritty to silty texture.

11790' Carbonaceous Shale = red-brown to dark brown to black; dense to brittle tenacity; irregular to blocky fracture; generally massive cuttings habit; earthy to dull to occasionally greasy luster; massive structure with occasional black stringers; visible signs of degassing present in sample.

11880' Sandstone = color varies from gray to white to off-white to occasionally translucent; quartz framework; fine to medium grains that are fair to well sorted; grains are round to sub-round with low to moderate sphericity; sample is firm friable to moderately hard; silica cementation; sample contains dark brown and black lithic fragments which account for two to three percent of sample.

12000' Siltstone = gray to brown to dark reddish brown; very dense to brittle tenacity; irregular to blocky to earthy fracture; tabular to wedgelike cuttings habit; earthy to dull to occasionally greasy luster; smooth to silty texture; overall thick to massive structure.

12090' Carbonaceous Shale = dark gray to black in color with a dense to brittle tenacity; irregular to planar fractures with an elongated to wedgelike ctgs habit; vitreous to resinous luster with a silty to abrasive texture.

12160' Shale = gray to dark gray in color with brittle to crumbly tenacity; tabular to wedgelike ctgs habit with a dull to earthy luster; smooth to silty texture.

12210' Sandstone = off-white in color with a calcitic framework; medium to fine grain size with subround to subangular angularity; moderate to low sphericity; brittle to crumbly tenacity with wedgelike to elongated ctgs habit; waxy to dull luster with a gritty to silty texture.

12300' Carbonaceous Shale = red-brown to dark brown to black; dense to brittle tenacity; irregular to blocky fracture; generally massive cuttings habit; earthy to dull to occasionally greasy luster; massive structure with bands of carbonaceous material.

12380' Sandstone = color varies from gray to white to off-white to occasionally translucent; quartz framework; fine to medium grains that are fair to well sorted; grains are round to sub-round with low to moderate sphericity; sample is firm friable to moderately hard; slightly reactive to HCl solution; calcite cementation.

**Exxon Mobil
FRU 197-33A4**

Daily Activity Summary

NOTE – Data For This Section Provided By ExxonMobil

5/17/09 Skid rig to well FRU 197-33A4.

5/18/09 Put up and made up 3 joints of 5" heavyweight drill pipe and tested BOP's, installed wear bushing, picked up BHA, power drive and MWD.

5/19/09 Made up bit, put up heavy weight drill pipe from 588' to 740', installed rotating head, performed shallow hole test with MWD tool at 830', tripped in hole from 830' to 3744', pressure tested casing, drilled cement from 3744' to 3779', drilled float from 3779' to 3780', drilled cement from 3780' to 3872'; drilled from 3886' to 3901' and performed an F.I.T test, drilled from 3901' to 3920'.

5/20/09 Drilled from 4401' to 5127'; drilled from 5127' to 5756', rotating rubber came loose, fixed bearing assembly, drilled from 5756' to 5926'.

5/21/09 Drilled from 5926' to 6231', back reamed pipe got stuck at 6162', worked pipe, drilled from 6231' to 6326', back reamed pipe got stuck at 6315', worked pipe, back reamed hole; drilled from 6326' to 6788'.

5/22/09 Drilled from 6788' to 6798', pulled out of hole from 6798' to 3780', tight spot at 6410', pulled out of hole from 6410' to 740', removed rotating rubber and installed trip nipple, pulled out of hole with heavy weight and drill collars, laid down BHA, attempted to lay down MWD tool was stuck in powerdrive; changed out jars, tripped in hole to 703', pulled trip nipple and installed rotating head, tripped in hole from 703' to 6010', washed and reamed from 6010 to 6573', tight spot at 6359'.

5/23/09 Washed and reamed from 6573' to 6798', drilled from 6798' to 7125'; drilled from 7125' to 7899' while taking a survey at 7515'.

5/24/09 Drilled from 7899' to 8467'; drilled from 8467' to 8723', tripped out of hole from 8726' to 6194'.

5/25/09 Pulled out of hole from 6194' to 703', pulled rotating rubber and installed trip nipple, laid down heavy weight and drill collars, rigged up casing equipment; finished rigging up casing crew, ran casing from 274' to 6460' while filling casing every 1000'.

5/26/09 Ran casing from 6460' to 7006', lost returns at 7000', washed and reamed from 7006' to 8708', rigged down CRT tool; rigged down casing crew and rigged up bells and elevators, rigged up cementing crew, cemented, rigged down cementing crew.

5/27/09 Tested BOP's, rigged down testing equipment; pulled test plug and installed wear bushing, tripped in hole from 860' to 6643', installed rotating rubber, tripped in hole from 6643' to 8583'.

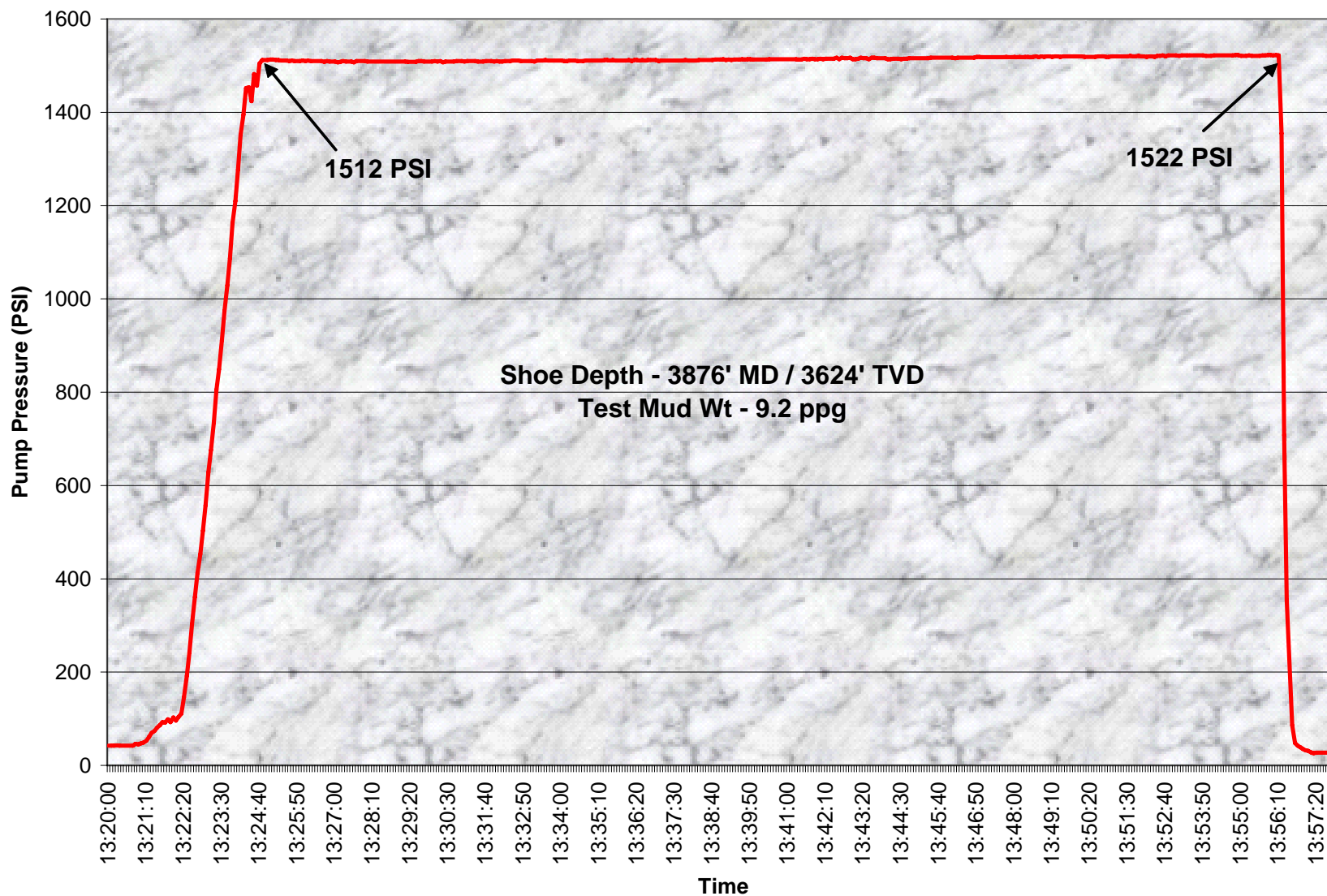
5/28/09 Washed down from 8486' to 8583', performed casing test, drilled out cement and float collar, slip and cut casing, changed out XT-39 saver sub; finished weight on bit calibration, drilled out float collar and cement and drilled 10' of new hole, circulated hole clean, performed a F.I.T test, drilled from 8733' to 8920'.

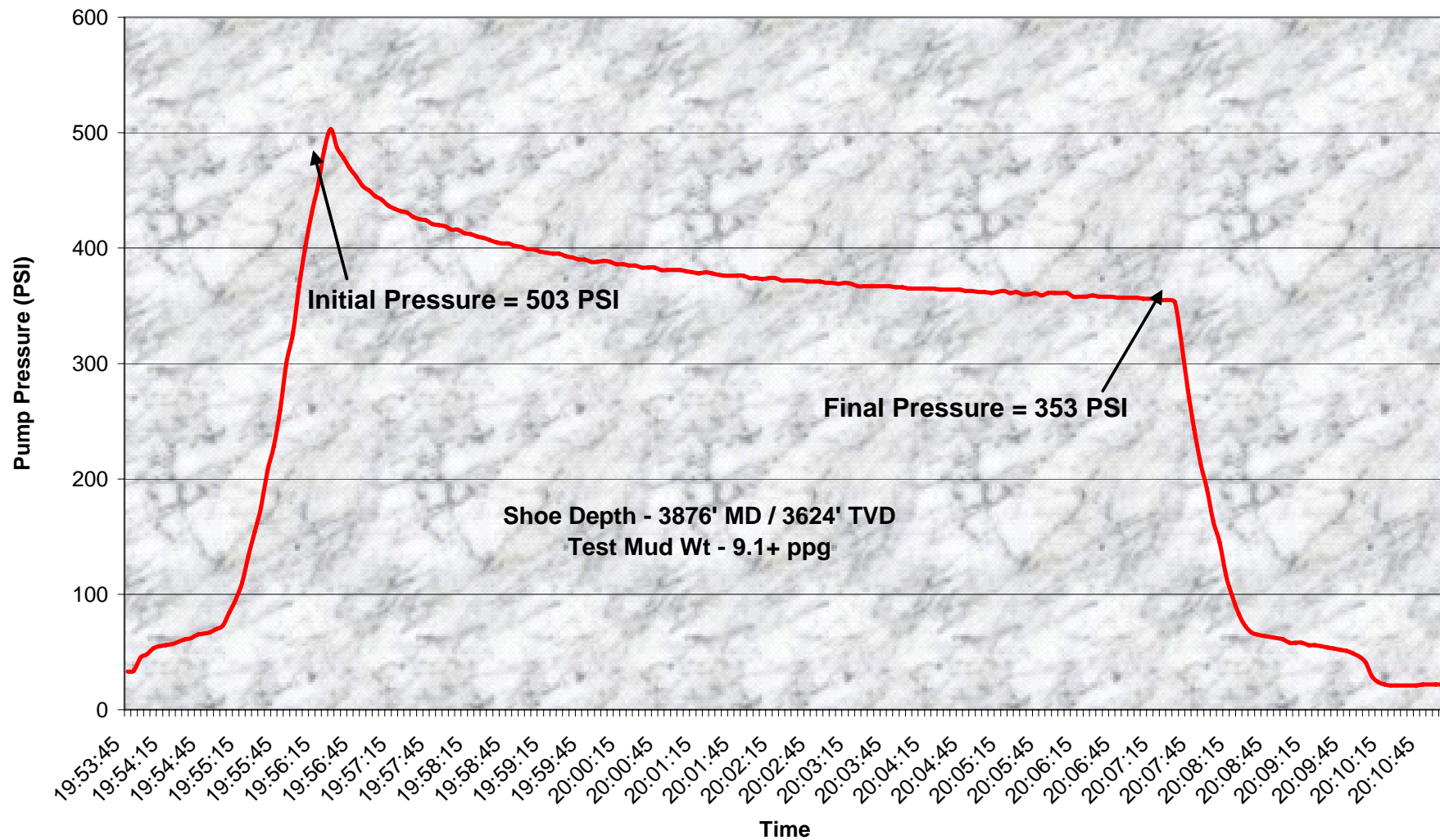
5/29/09 Drilled from 8920' to 9070', installed patch on MD TOTCO, drilled from 9070' to 9185'; drilled from 9185' to 9361', pumped a high viscosity sweep and circulated out, spotted 20

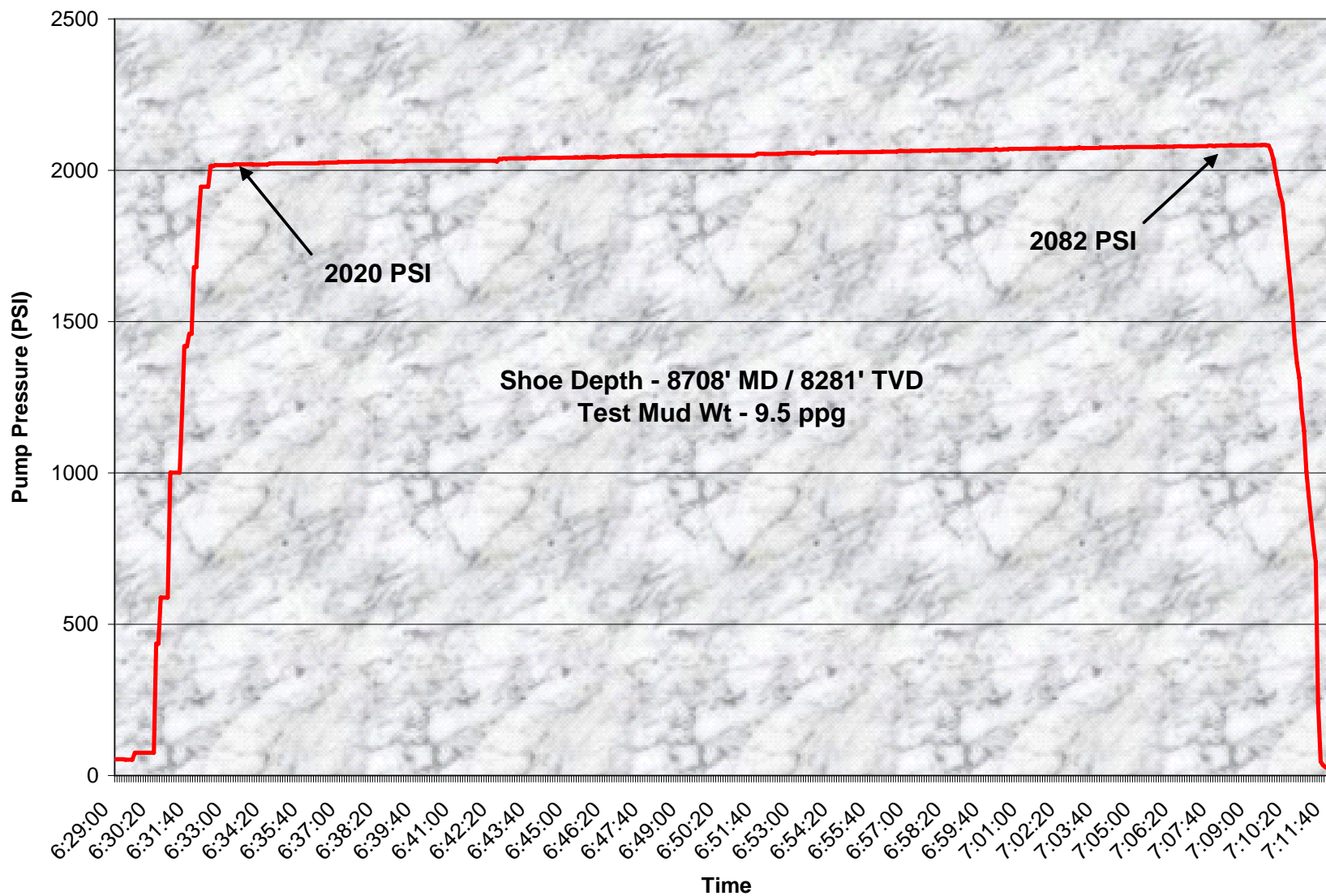
BBS 10.5 PPG mud in open hole, tripped out of hole from 9361' to 1793', laid down bad joint and put up new joint.

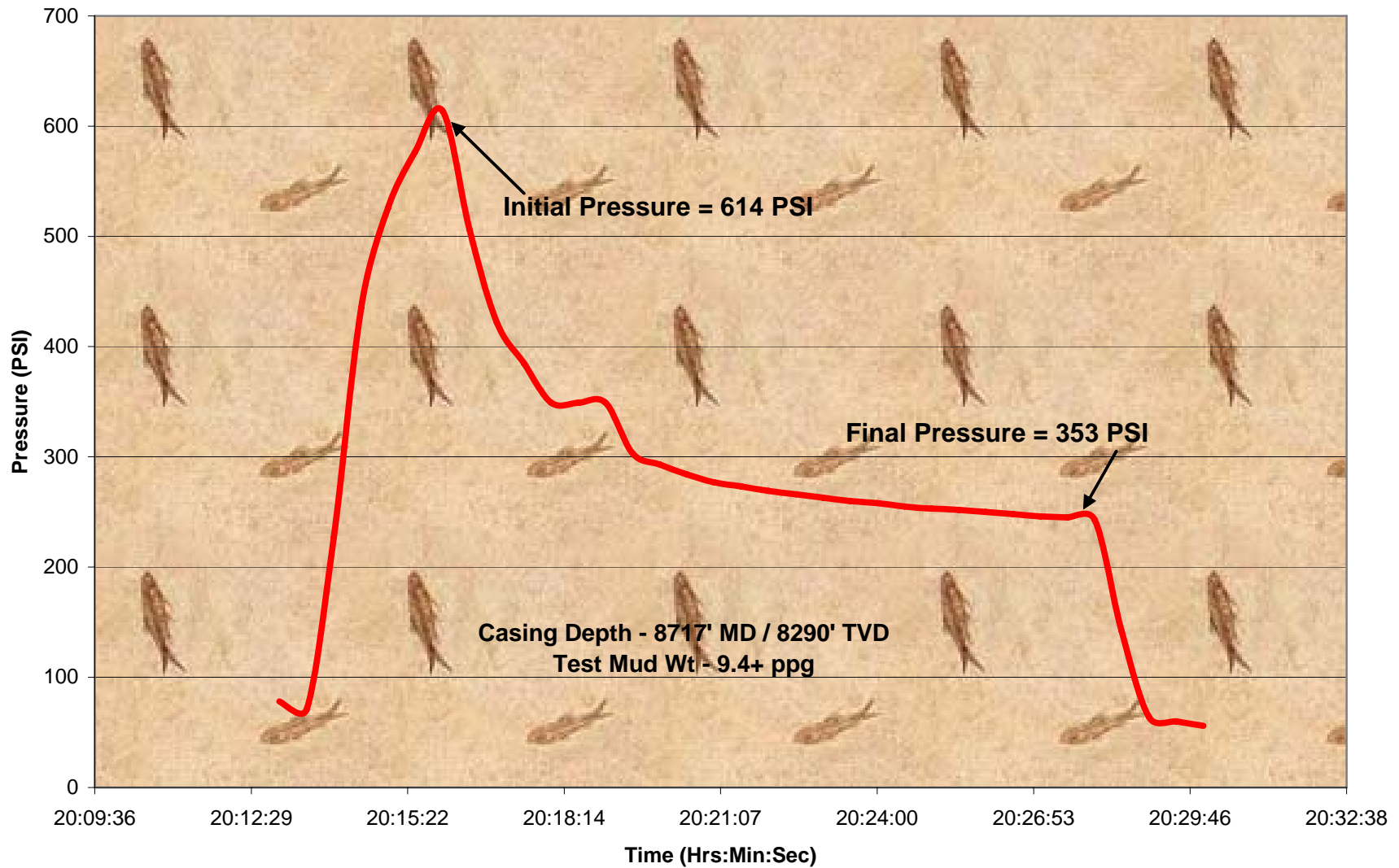
- 5/30/09 Pulled out of hole from 1793' to 820', pulled rotating head and installed trip nipple, pulled out of hole with BHA and laid down bit, rigged up wireline crew, ran wireline, put up new bit and ran in hole with BHA; tripped in hole to 820', changed out trip nipple to rotating head, tripped in hole from 820' to 9167', washed from 9167' to 9361', circulated out gas, drilled from 9361' to 9512'.
- 5/31/09 Drilled from 9512' to 10004'; drilled from 10004' to 10475'.
- 6/1/09 Drilled from 10475' to 10528', shut in well on choke slowly bringing up pumps to slow pump rate, circulated out gas through choke, drilled from 10528' to 10600'; drilled from 10600' to 11055'.
- 6/2/09 Drilled from 11055' to 11491'; drilled from 11491' to 11870'.
- 6/3/09 Drilled from 11870' to 12120' with connection gases of 5760 and 5437 units; drilled from 12120' to 12380'.
- 6/4/09 Drilled from 12380' to 12512' TD, relaxed well; circulating and relaxing well, pulled out of hole on elevators from 12512' to 7709'.
- 6/5/09 Skidded rig to new well.

ExxonMobil
FRU 197-33A5
Pressure Tests









Exxon Mobil
FRU 197-33A4
Drilling Fluid Reports

FRU 197-33A4

WATER BASED MUD REPORT

Mud Engineering Services Provided By Halliburton

Property	05/19/09	05/20/09	05/21/09	05/22/09	05/23/09	05/24/09	05/25/09
Sample Temperature (deg F)	95	120	120	120	120	120	120
Sample Depth	3951	5140	6320	6798	7133	8460	8723
Mud Weight (lb/gal)	9.2	9.2	9.3	9.3	9.3	9.3	9.5
FV (sec/quart)	44	49	49	44	44	42	45
PV(cP)	16	11	12	12	15	11	13
YP (lb/100 ft ²)	16	17	14	11	14	20	13
Gels (10 sec lb/100ft ²)	6	16	12	7	7	7	7
Gels (10 min lb/100ft ²)	14	44	44	14	29	22	10
Gels (10 30 min lb/100ft ²)	23	51	56	21	36	35	19
API FL (cc/30 min)	9.8	13.0	13.0	10.0	10.6	10.2	10.4
Cake (API)	2	2	2	2	2	2	2
pH	11.2	10.2	10.9	10.1	10.3	10.1	10.1
PM	1.2	1.2	1.0	.60	.95	.90	.90
Pf	.50	.10	.10	.10	.05	.05	.05
MF	.90	.40	.30	.35	.20	.25	.35
Excess Lime (lb/bbl)	.18	.29	.24	.13	.23	.22	.22
Hardness (mg/l)	320	40	40	40	20	20	20
Chlorides (mg/l)	350	350	1200	1200	1200	1200	1200
NaCl (mg/l)							
MBT (lb/bbl)	17.5	20.0	17.5	17.5	20.0	20.0	20.0
Retort Water (%)	93.3	93.8	93.5	93.4	93.4	93.6	93.0
Sand (%)	.20	.30	.25	.25	.50	.25	.25
Retort Solids (%)							
Corrected Solids (%)	6.5	6.0	6.2	6.3	6.3	6.1	6.7
CO2							

FRU 197-33A4**WATER BASED MUD REPORT**

Mud Engineering Services Provided By Halliburton

Property	05/26/09	05/27/09	05/28/09	05/29/09	05/30/09	05/31/09	06/01/09
Sample Temperature (deg F)	120			120		120	120
Depth (feet MD)	8723	8723	8732	9187	9358	9993	10597
Mud Weight (lb/gal)	9.3	9.5	9.4	9.5	9.7	9.7	10.1
FV (sec/quart)	40	38	35	43	43	39	49
PV(cP)	12	12	12	15	12	12	12
YP (lb/100 ft ²)	9	8	6	19	9	16	12
Gels (10 sec lb/100ft ²)	5	4	4	8	7	7	6
Gels (10 min lb/100ft ²)	11	9	7	13	10	10	17
Gels (10 30 min lb/100ft ²)	15	14	10	20	17	22	25
API FL (cc/30 min)	10.0	10.2	10.0	9.0	9.6	10.0	10.0
Cake (API)	2	2	2	2	2	2	2
pH	9.0	9.7	9.5	10.4	10.3	10.1	10.4
Pm	.60	.30	.25	.60	.55	1.0	.80
Pf	.05	.05	.05	.05	.10	.05	.05
MF	.25	.15	.30	.15	.30	.50	.30
Excess Lime (lb/bbl)	.14	.07	.05	.14	.12	.25	.20
Hardness (mg/l)				20		20	
Chlorides (mg/l)	1200	1200	1200	1200	1200	1200	1200
NaCl (mg/l)							
MBT (lb/bbl)	20.0	17.5	17.5	20.0	20.0	20.0	20.0
Retort Water (%)	93.5	92.0	93.0	92.0	92.0	92.0	91.0
Sand (%)	.25	.25	.25	.25	.25	.50	.50
Retort Solids (%)							
Corrected Solids (%)	6.2	7.7	6.7	7.7	7.7	7.7	8.7
CO2							

FRU 197-33A4**WATER BASED MUD REPORT**

Mud Engineering Services Provided By Halliburton

Property	06/02/09	06/03/09	06/04/09	06/05/09			
Sample Temperature (deg F)	120	125	125				
Depth (feet MD)	11407	12090	12508				
Mud Weight (lb/gal)	10.1	10.2	10.2				
FV (sec/quart)	42	42	41				
PV(cP)	16	19	21				
YP (lb/100 ft ²)	12	15	11				
Gels (10 sec lb/100ft ²)	6	5	4				
Gels (10 min lb/100ft ²)	9	9	7				
Gels (10 30 min lb/100ft ²)	22	18	9				
API FL (cc/30 min)	10.0	10.4	10.6				
Cake (API)	2	2	2				
pH	10.2	9.9	9.8				
Pm	.85	.45	.40				
Pf	.10	.50	.05				
MF	.35	.40	.55				
Excess Lime (lb/bbl)	.20	.11	.09				
Hardness (mg/l)	20	60	60				
Chlorides (mg/l)	1200	300	400				
NaCl (mg/l)							
MBT (lb/bbl)	20.0	20.0	20.0				
Retort Water (%)	91.0	87.5	87.7				
Sand (%)	.50	.20	.50				
Retort Solids (%)							
Corrected Solids (%)	8.7	12.3	12.1				
CO ₂							

**FRU 197-33A4****WATER BASED MUD REPORT**

Mud Engineering Services Provided By Halliburton

Property							
Sample Temperature (deg F)							
Depth (feet MD)							
Mud Weight (lb/gal)							
FV (sec/quart)							
PV(cP)							
YP (lb/100 ft2)							
Gels (10 sec lb/100ft2)							
Gels (10 min lb/100ft2)							
Gels (10 30 min lb/100ft2)							
API FL (cc/30 min)							
Cake (API)							
pH							
Pm							
Pf							
MF							
Excess Lime (lb/bbl)							
Hardness (mg/l)							
Chlorides (mg/l)							
NaCl (mg/l)							
MBT (lb/bbl)							
Retort Water (%)							
Sand (%)							
Retort Solids (%)							
Corrected Solids (%)							
CO2							

Exxon Mobil
FRU 197-33A4

Bit History

[illegible]