



PALOMINO PETROLEUM, INC.

Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name: Nattier Trusts #1
 API: 15-079-20717
 Location: N2 - SW - SW - SE _ Sec. 16 Twp. 24S Rge. 2E
 License Number: 30742
 Spud Date: 3/17/2019
 Surface Coordinates: 426' FSL & 2310' FEL

Region: Ness County, KS
 Drilling Completed: 3/26/2019

Bottom Hole Same as surface coordinates
 Coordinates:
 Ground Elevation (ft): 1434' K.B. Elevation (ft): 1439'
 Logged Interval (ft): 1500' To: 3500' Total Depth (ft): 3500'
 Formation: Arbuckle @ RTD
 Type of Drilling Fluid: Mud-Co. Chemical Drispac

Printed by MudLog from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Palomino Petroleum, Inc.
 Address: 4924 SE 84th St.
 Newton, KS 67114

GEOLOGIST

Name: Eli J. Felts
 Company: Gravity Oil, LLC
 Address: 954 Prairie Park Road
 Wichita, KS 67218
 E: ejfelts47@gmail.com, C: 316.204.5059

Formation Tops

SAMPLE TOPS

Heebner	1959 (-520)
Brown Lime	2143 (-704)
Lansing	2212 (-773)
Stark	2556 (-1117)
B/KC	2610 (-1171)
Marmaton	2668 (-1229)
Altamont	2770 (-1331)
Pawnee	2798 (-1359)
Ft. Scott	2826 (-1387)
Cherokee Shale	2839 (-1400)
Burgess Sand	2855 (-1416)
Mississippian	2916 (-1477)
Kinderhook	3138 (-1699)
Hunton	3228 (-1789)
Maquoketa	3285 (-1846)
Viola	3312 (-1873)
Simp Sand	3359 (-1920)
Simp Shale	3377 (-1938)
Arbuckle	3421 (-1982)
RTD	3500 (-2061)

LOG TOPS

Heebner	1958 (-519)
Brown Lime	2142 (-703)
Lansing	2211 (-772)
Stark	2553 (-1114)
B/KC	2608 (-1169)
Marmaton	2662 (-1229)
Altamont	2666 (-1327)
Pawnee	2795 (-1356)
Ft. Scott	2822 (-1383)
Cherokee Shale	2836 (-1397)
Burgess Sand	2852 (-1413)
Mississippian	2916 (-1477)
Kinderhook	3137 (-1698)
Hunton	3228 (-1789)
Maquoketa	3284 (-1845)
Viola	3312 (-1873)
Simp Sand	3359 (-1920)
Simp Shale	3377 (-1938)
Arbuckle	3421 (-1982)
RTD	3499 (-2060)

Drilling Report

3/17/19

Moved in WW Drilling, L.L.C. rotary tools (Rig #4). Spudded at 5:45 p.m. Ran surface casing. Plug down at 12:00 a.m. 3/18/19

3/18/19

Waiting on cement.

3/19/19

Drilling @ 1533'

3/20/19

Drilling @ 2035'

Ran Gyro survey to check hole deviation.

3/21/19

Drilling @ 2310'

3/22/19

3/22/19
 Drilling @ 2705'
 DST #1

3/23/19
 Drilling @ 2920'

3/24/19
 DST #2

3/25/19
 DST #3
 3237' (welding on flow nipple)

3/26/19
 3470' (drilling rat-hole)
 Logged well

3/27/19
 Ran 5.5" 15.5# Oil String of Casing

Drill Stem Tests

DST #1 Burgess Sand
 Interval: 2838'-2860'
 (22') Anchor
 15-30-15-30

IF: sb built to 123"
 ISI: wk sfc bb
 FF: built to 75"
 FSI: 6" bb
 SIP: 756-757#
 IF: 150-386#
 FF: 396-534#
 Hydrostatic: 1426-1403#
 BHT: 107 F
 RW: 0.147 @ 56.4 Deg

Recovery: 1200'
 65' GIP
 260' GVSO&HMCW (15% G 4% O 47% W 34% M)
 940' GOSSMCW (4% G 1% O 88% W 7% M)

DST #2 Hunton
 Interval: 3137'-3232'
 (95') Anchor
 30-30-60-60

IF: wb built to 5"
 ISI: no bb
 FF: wb built to 9"
 FSI: no bb
 SIP: 1231-1236#
 IF: 21-44#
 FF: 47-81#
 Hydrostatic: 1538-1530#
 BHT: 104 F
 Grav: 27.5 API @ 60 Degrees

Recovery: 155' TF
 75' CO
 80' OCM (17% O 83% M)

DST #3 Hunton
 Interval: 3137'-3237'
 (100') Anchor
 30-30-60-60

IF: built to 17"
 ISI: no bb
 FF: built to 38"
 FSI: 1/2" surface bb
 SIP: 1230-1237#
 IF: 25-109#
 FF: 109-210#
 Hydrostatic: 1533-1527#
 BHT: 105
 Grav: 26.3 API @ ambient Degrees






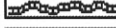



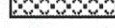
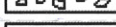


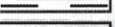
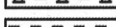


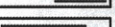






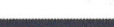

Recovery: 445' TF
 165' CO
 160' GOCM (8%G 13%O 79%M)
 120' OCM (20% O 80%M)

Pipe Setting

3/17/2019
 Ran 5 jts. new 8 5/8" 23# surface pipe set at 218' and cemented w/ 170 sacks Class A, 2% gel, 3% c.c. Cement did circulate. Plug down at 12:00 a.m. on 3/18/19

3/27/19
 Ran 84 jts. new 5.5" 15.5# Range 3 casing set 8' off bottom @ 3492'. Pumped 500 gal. mud flush with additives followed by 20 bbls. KCL water and cemented w/ 200 sacks SMD cement & 100 sacks EA-2 cement. Pugged rathole w/ 30 sacks SMD cement. Plug down @ 2:15 p.m. Baskets @ 3365' & 1651'. Centralizers at 3408', 3365', 3280', 3237', 3200', 3157', 3085', 2999', 2919', 1651'. Shoe joint = 42.45'.

ROCK TYPES

 Anhy	 Congl	 Lmst tan	 Shale 2	 Ss
 Bent	 Dol	 Lmst	 Shale gry	 Till
 Brec	 Gyp	 Meta	 Shale 1	
 Cht	 Igne	 Mrlst	 Shcol	
 Clyst	 Granite 2	 Quartz	 Shgy	
 Coal	 Granite	 Salt	 Slst	

tholo	MD	Rate of Penetration		Geological Descriptions	DSTs/Mud/Surveys, etc.
		ROP (min/ft)	Gamma (API)		

Tons have been adjusted to Halliburton Logging tools &

Tops have been adjusted to Halliburton Logging tools & samples have been lagged.

Ran the following Open Hole Logs:

- >Spectral Density Dual Spaced Neutron
- >Array Compensated True Resistivity
- >Micro
- >Borehole Compensated Sonic Array
- >Annular Hole Volume (5.5" Casing)

1450

1450

No more than 10K weight on bit due to faulting in the area. Preventative measures to decrease deviation were taken & wireline surveys taken every 100' until deviation worsened to 3.25 degrees @ 2164'. At this depth a Gyro contractor was called out to measure deviation from 2164' on up to determine DLS.

***very poor samples until mud added just before Brown Lime. 30-33 vis was not enough to carry samples in laminar flow. Samples up to Brown Lime were dominated by shales & cavings; any mention of LS was describing any sand sized particles that were able to be lifted with the low vis fluid.

SH - grey, med hard to si sippery; trans to argill SL ip/ dense w/ sm interbedded shales

SH & Arg LS, aa, increase LS - tan to brown, med to fine xln; re-xln ip; oa blooky & ds

1500 C

1500

cup washes light grey w/ flood sh - grey, soft, dissolves/ few LS - tan-brown, med to fine xln; blocky dse w/ few foss

mostly sh; abdt grey, gummy SH - sticky, few LS - cream to tan; sm argillaceous w/ interbedded grey shale; chalky ip; sl dense, ns

LS - cream to brown, med xln, highly foss, sl argillaceous, fair-good fraibility, slightly chalky; ~40% med grey shales, soft to med hard

LS - crea, to brown, med to fine xln, abundant foss, argillaceous in part; few pcs highly oolitic; trace chalky in some pieces; abundant grey shales remain

SH - lt grey to green in part, med soft, sm laminated; abundant micaceous flecks; mst silty to sub-sandy (no vis clusters)

SH - shades of grey, med soft to sticky/gummy ip; decrease micaceous; trace pcs LS

1550

1550

SH - lt to dark grey, some cream to maroon, most soft & silty, few micaceous; sm pcs mottled; few pcs w/ dark staining in laminations; few darker grey shales; poss cavings

SH - no significant changes; poss sandy ip

SH - lt to dark grey, gummy to sticky, micaceous incl ip; oa soft, few vis laminated

90% SH - grey, soft to med; silty in most; few pcs LS - cream to brown, fine xln & foss; dense

1600 C

1600

Mostly SH - shades of grey, lt to med dark, trans cream; few pcs LS - cream to brown, med xln, blocky & foss ip

LS - cream, med xln w/ chalky txture; abdnf foss; few larger - re-xln in some, trans to LS - tan brown, fine to micro xln, dense; trace pcs sandy

LS - cream to white, lt grey, mst med lxn, blocky, argillaceous in some; poor visible por; abundant shales; trace CH - grey to white, vitreous, foss

LS - cream, med xln & hvy foss, app fractured in some; flood shales - silvers, grey to dark; sm mottle

LS - cream to lt grey, mst med xln, foss w/ re-xln in some; few fine xln w/ smooth text; increase shales

1650

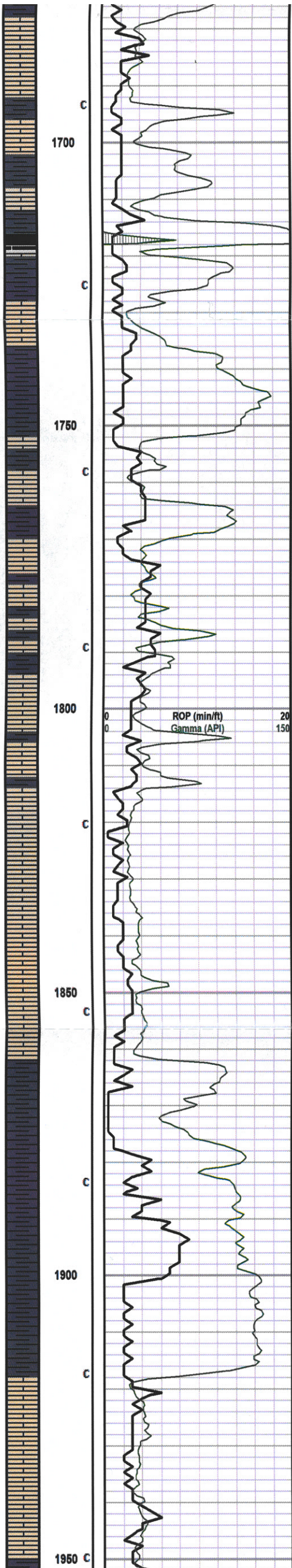
1650

SS - white to lt grey clusters, fine to med grained; sub rounded; moderately friable w/ abdt micaceous inclusions; no odor; ns

poor sample; appears mst shaley

poor sample; appears mst shaley

Mud-Co
Depth: 1660'
Wt. 9.2+
Vis. 34
Filtrate N/A



pqs; few cream LS - med xin & abundant shales; v. fine cuttings

1700

pqs; abundant fines; LS - cream to tan, brown & varicolored shales

1700

pqs; abundant fines; LS - cream to tan, brown & varicolored shales

SH - varicolored as above, few darker; sub carb

1750

SH - aa, few clusters SS - app grey to white, fn-md gmd, sub rounded; gd friability; mst barren w few mic & gluac inclusions

1750

SH - varicolored; mottled in some, most soft to med to firm in part

SH - varicolored; mst green, grey, maroon, sm mottled, soft to friable in some, few dark grey

>90% SH, varicolored; trace fine cuttings ls, etc on edges

very poor sample; primarily shale cavings & sub-sand sized cuttings of LS, etc; check VIS

1800

LS - cream to white; abundant shales; very poor sample

1800

LS - cream & others, few ss; abundant shales, varicolored. Cuttings v. fine

Mostly shales; few LS - cream, grey, few yellow-soft & chalky; few foss, partial re-xin; very poor sample

pqs, v. fine cuttings; flood shales & limes, few sandy

as above

1850

pqs; increase LS -white to cream, foss ip, sm ooc w partial staining; abundant shales

1850

v. fine cuttings; LS - cream, sm occ, few staining; abundant shales

PQS v. fine cuttings; LS - cream, sm occ, few staining; abundant shales

varicolored shales; few v. fine LS & SS cuttings

1900

99% SH - grey - green, minute trace LS - white, fine xin

1900

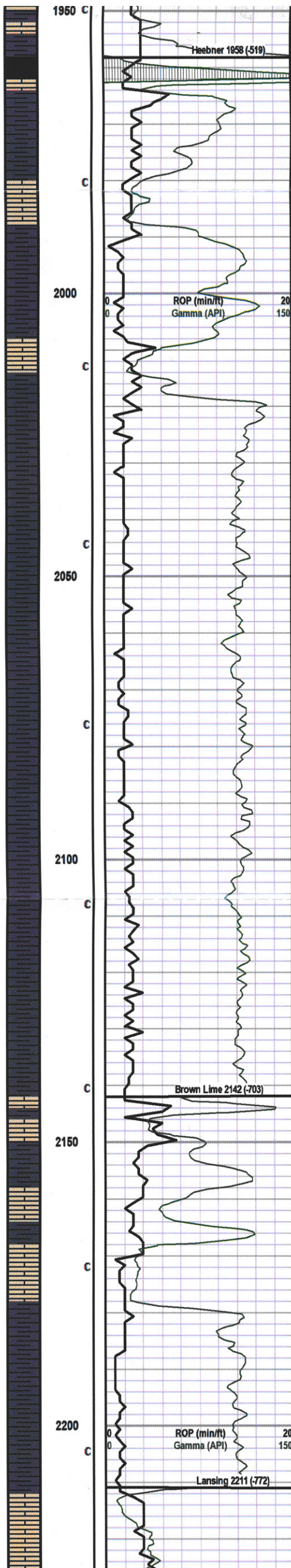
99% SH

99% SH

1950

Mostly SH - few LS - cream to white, fine to med xin, some re-xin; friable to chalky, ques stain

1950



Mostly SH - few LS - cream to white, fine to med xin, some re-xin; friable to chalky, ques stain in few

SH - dark brown to black, laminated, carbonaceous; no vis gas; sl chalk edges (Heebner)

SH - few carb aa, trans LS - cream to tan, fine to microxin, few foss; dense blocky; rare re-xin

90% Shales ;few LS - cream to white, fine xin, chalky ip; fraible ^very fine cuttings lime

Flood LS - cream to white ^v fine cuttings; fn-med xin; chalky w/ few ooc & foss porosity; trace staining in few pcs; some re-xin cal & loose calc; no odor, ns

LS - cream to white, fine xin; few foss; chalky ip, mostly friable, rare pc w/ gils staining; marbled; ^abundant shale ~95%+

Flood SH (95%+) - grey to green, some brown; trace pcs LS - cream to white

LS - cream, fine to med xin; sl granular ip, trc chalky few sl lt -dark staining (gils) friable in most; few re-xin calc

LS - cream to lt tan, mst med xin w/ partial re-xin, rare foss, friable to chalky ip; flood shale

SH - flood grey to green, some mottled, med soft, slippery in some

SH - grey to green, mottled in some, overall soft

SH - grey, few green to dark grey, few mottled; sl. Micaceous in some

SH - varicolored greys, some mottled, green, most soft, rare SS clusters, app white, fine grained, micaceous ip

SH - varicolored greys, some mottled, green, most soft, rare SS clusters, app white, fine grained, micaceous ip

SH - varicolored grey, some mottled, few green & brick, few SS, aa; oa soft to med

SH - as above

SH - grey, some green, few mottled, micaceous inclusions in some; rare SS

SH

SH

SH - dark to black; poss carb; ques show gas

flood LS - cream to tan, brown, fine to med xin, sucros ip; friable, re-xin in most w/ few foss, staining ip; no vis shows

Abundant shales & canyover; few LS aa, abdt SS - grey to white clust; fine grained^{***} trip trash

SH - greys to green, some mottled w/ dark grey, maroon; soft & silty, trace LS - cream to tan, fine-med xin; ^v. small cuttings ls

LS - cream, med xin w/ granular txture; abundant re-xin calc w/ good friability; scattered staining throughout; no visible shows / partial spotted yellow fluor

LS - cream, med xin w/ sm granular txture marbled w/ fine xin tan, re-xin porosity in most w; few ooc & oolites; fair to good vis por w/ good friab & spotted str & scattered dull ylw fluor ~%50 shales remain

SH - grey to green, mottled in some, miceous ip w/ few sandy; soft to med firm

LS - cream to lt grey, mst fine xin, re-xin edges in many, fair vis porosity ip w/ some loose xin calc; scattered chalk

LS - cream to lt grey, mst fine to med xin, vis frac ip w/ re-xin calc; some fine xin - platy &

1950

Run Wireline Survey : 1 degree

2000

2050

Rig Check
Run Wireline Survey : 3.25 degrees

Run Wireline Survey : 3 degrees

2100

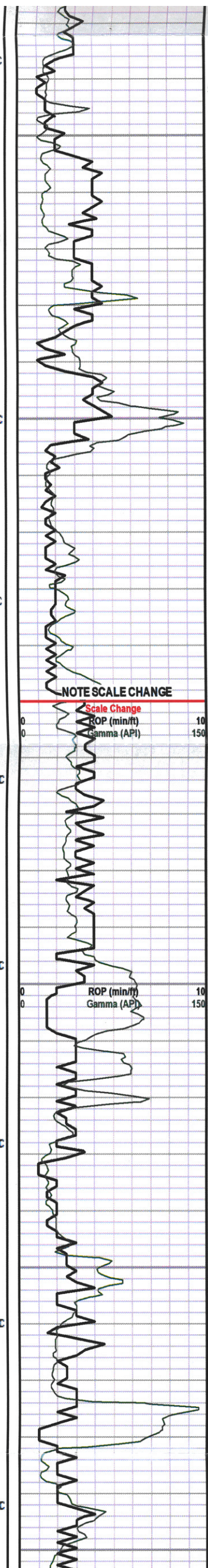
Adding Mud from Premix

Mud-Co
Depth: 2146'
Wt. 9.2+
Vis. 31
Filtrate N/A
Chl 1,500
LCM 0

2164' 3:30 p.m.
Drop Gyro Survey, Round Trip.
2150

Samples Improve Drastically

2200



Few LS, aa; flood shale cavings 95% large shale chunks

LS - cream to tan, few brown; cream med xin w/ chalky txt, abdt oolites & sm ooc porosity w/ partial stain and trans chalk; ~50% shale cavings (large chunks) remain

2250 Flood LS - cream, med xin w/ abdt oolites & sm ooc porosity, few transition to pp & vuggy w/ re-xin porosity; chalky break w/ fair to good vis porosity; quest stain in few; no odor, ns

LS - cream to lt grey, fine to med xin, re-xin & some visible fractures; dark gils stain in some; chalky in part

LS - cream to white, lt grey to tan/brown, most med xin, highly foss (varied) w/ fair visible porosity; chalky in part; good friability w/ scattered brown staining; no odor no shows

LS - cream to brown, med to fine xin w/ some micro xin w/ partial re-xin; foss in most, few w/ granular texture; mst dense; trace chalky; few pcs shaley contact (lt green)

LS - v. similar as above; increase chalky; argillaceous ip w/ some brown mineral staining; no odor, ns

2300 LS - cream to tan, brown, cream - med xin to chalky, tan to brown is fine to med xin w/ dark staining (poss mineral) platy & dense; few pcs sharp, sub cherty; ns

LS - cream to brown, as above; few lt grey, fine to micro xin w/ re-xin ip; chalky edges, oa dense; few shaley

LS - cream, med xin chalky; tan brown, fn to micro xin; foss w/ dark mineral strn; trace residual strn on break; no odor, ns

LS - cream to tn, lt gry to brown, fine to med xin, sl chalky to granular ip; few re-xin; scatt staining; no odor, ns

LS - cream to tan, brown, fn to med xin, some micro to sub cherty; foss ip; trace pcs argillaceous, few shaley; oa dense; poor vis por, ns

NOTE SCALE CHANGE

2350 pqs⁴ LS aa>>mixing mud to raise vis

LS - cream to tan, grey & brown, mst med xin; foss ip w/ sm re-xin w/ few loose xin calc.; chalky in some, trace edge & fract'd stain in some pcs; mod friable, few pcs argl w/ edge shale ~40% shaley oa, no odor, ns

LS - cream to grey, most fine xin, sm med; mst friable; chalky ip; few argillaceous, poor vis porosity; no odor, ns; abundant grey shales

LS - cm to grey, sm brown, med-fine xin; sl argillaceous (cup washes brown) few scattered CH - trans to opaque, grey-brown, vitreous; 30% shaley

LS - few cm, most brown to grey, dark; fine to med xin; few v. fine cherty pieces; wahses grey-brown

2400 LS - cream to grey, med to fine xin; few microxin, brown; scatt cherty; few pcs sh-grey, some soft to globby (cup washes gry-brown)

SH - grey, lt to dark, most med soft; few mushy (washes gry-brwn)

SH - as above; trans to cream grey LS - med xin, argillaceous & med soft; foss

V. similar aa, increase argillaceous lime, less shaley

LS - cream to grey, most med xin, foss, argillaceous in most; few chalky; trace CH - grey brown, vitreous

LS - cream, med xin w/ chalky texture, foss ip, scattered chalk, some partial re-xin; dark fractured & edge staining; appears residual; nsfo, chalky break, ns (cup washes white)

2450 LS - cream to tan, grey & brown, mst med xin; foss ip w/ sm re-xin; chalky in some, trace edge & fract'd stain in some pcs; mod friable; no odor, ns; few pcs CH - grey to white, sharp & vit

LS - cream to tan, brown, fine to micro xin ip; chalky edges, trace foss; most blocky & dense w/ poor vis porosity;

Flood SH - grey, most soft med grey, few mottled dark brown to grey, few mushy lite grey, washes cup grey

LS - cream to white, fine to med xin, chalky txt w/ partial re-xin, some pp-sm vuggy & re-xin porosity; slight odor, ssfo on break, lt brown oil; fair scatted dull yellow flour w/ few fluor drops floating; v. slow weeping cut forms blue ring over 30 seconds

2500 LS - cream to lt tan, sl sucr to chalky texture, partial re-xin; (2-3) pcs w/ show aa; overall chalky, barren, trace odor

2250

2300

Mud-Co
Depth: 2311'
Wt. 9.3+
Vis. 47
Filtrate 8.8
Chl 1,200
LCM 0

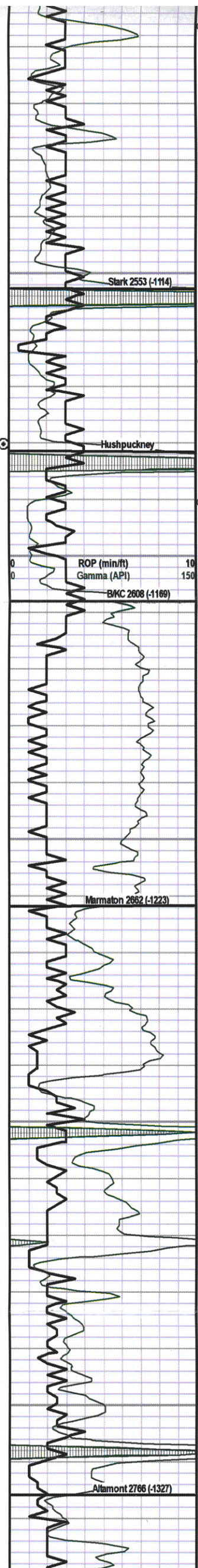
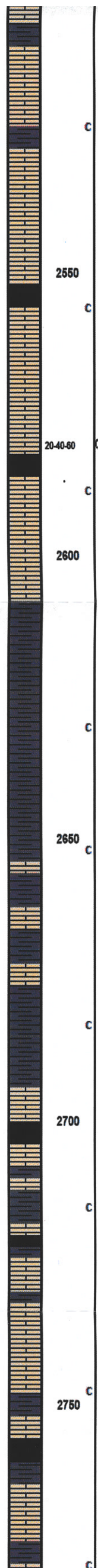
Vis Low > adding premix

2350

2400

2450

2500



LS - mostly cream, few lt grey, mst med xin w/ chalky texture; trans fine xin grey, platy & blocky, med firm (1-2) pcs w/ ssfo, poss cavings (no cup odor)

LS - cream, med xin w/ chalky & foss txture, foss (mst oolites w/ poor dev intrafoss porosity, abundant chalky; few pcs trans to dark brown, app shale contact

LS - cream, med xin w/ grey foss, chalky txture w/ poor vis porosity; mod friability w/ chalky break, few frax w/ re-xin 2ndary; sm dark gils stn ip; few pcs dark shales

LS - cream to tan, med xin, chalky, few foss; flood SH - grey to brown, some earthy, sub carb

2550 Stark 2553 (-1114)
 poor sample * shift change; large shale cavings; few crm LS & poss carb SH

SH - dark brown to black, earthy, carb, ssg; chalky edges; *dense

LS - cream, med xin, sucrosic ip, foss, intrafoss (ool) to interxin porosity; sl oom-oooc to sl vgy ip; trace show fo in tray w/ increase on break; fair cup odor; sptd fluor w/ slow streaming cut

LS - cream, trace pcs aa, trans fine xin, micrite to cherty ip; chalky w/ poor vis porosity

20-40-60 Hushpuckney
 SH - black, carb

LS - tan to brown, micrite, angular 2ndary xin devel (unknown yellow mineral); questionable so in (1-2) pcs; appear cavings

2600 B/KC 2608 (-1169)
 ROP (min/ft) 10
 Gamma (API) 150
 LS - cream, tan to brown, crm med xin, chalky w/ dark gils staining; tan - brown, fine xin, blocky & dense w/ poor vis porosity
 very poor sample 95% shale cavings; few LS - tan to grey, fine to micro xin w/ abundant foss, well cemented w/ poor intrafoss or vis porosity; dense

AA - flood shale cavings * few pcs mottled grey-green shales & argillaceous, foss LS, questionable

SH - few black carb, flood varicolored grey to green, brown, some mottled, soft to blocky, some grey, v. soft to mushy, sticky

SH - varicolored greys, some green to brown, soft & sticky to med hard, blocky; mottled in some; few trc pyrite clust

SH - lt grey w/ black mic specks, green, mst med soft - sl firm; few limey, argill, sm pyritic w/ pyrite xin dev in sh

SH - mst med grey, soft to mushy, sticky, few limey; argillaceous & partly foss

2650 Marmaton 2662 (-1223)
 SH - as above, increase dark, argillaceous (shaley lime) w/ foss; flood lt grey to white - v soft; gloffy - dissolves easily

SH, as above, trans to SS - gry to lt green, v. fine grained; mod friable w/ shaley matrix; few dark incl; oa med friable; poor visible porosity, no odor, ns : few LS - green to dark, argillaceous w/foss

SS - aa, trans to LS - cream to tan (sm green hue), med xin; highly foss w/poor re-xin & intrafoss porosity, few shaley (lt to med green, med soft)

LS - mst cream to tan, sm green hue, med xin, sandy ip; some foss; argillaceous, few brown, fine xnl, blocky & foss (knobby); trace shales, green & sandy aa, few grey, & dark brown to blk

2700
 LS - cream w/ sm sl green hue, fine to med xin, foss ip w/ few gm gluac staining; sandy in some w/ fn grained ss - frsted, well md/std; shaley & limey; trace chalky & few maroon & ylw shales; few pcs SH - dark w/ green mottled; earthy, ques sg

SH - grey/black & mottled green, trans LS - cream/tan, few green hue, med xin & foss; argillaceous ip; sl chalky

LS - cream to lt grey, sm brown, med xin, heavily foss, well cemented w/ poor intrafoss porosity; chalky ip
 Flood SH - deep brown to black, earthy, poss carb

LS - cream to lt grey, few brown, fn to med xin, hvy foss, poor re-xin ip; soft crush; trace blk carb sh w/ ssg; sl chalky throughout

2750 Altamont 2766 (-1327)
 LS - cream to lt grey, v. sim aa, few darker LS, micrite & few pcs CH - varicolored, opaque, vitreous
 questionable sample * brought in late*

SH - black, carb w/ ssg
 SH - grey lt grey & few LS - cream tan, fine xin; dense

LS - cream to lt grey, mst fine xin, platy & blocky, dense; no odor, ns

LS - cream to tan, brown, mst fine xin; platy & blocky, rare foss; oa dense; no odor, ns

2550

2600

2650

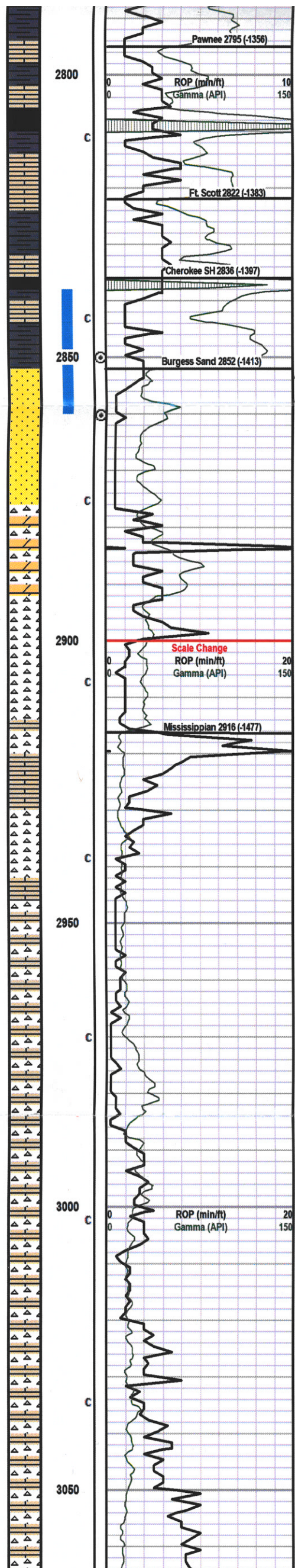
2700

2750

VIS: 50
 WT: 9.5#
 LCM: 1#

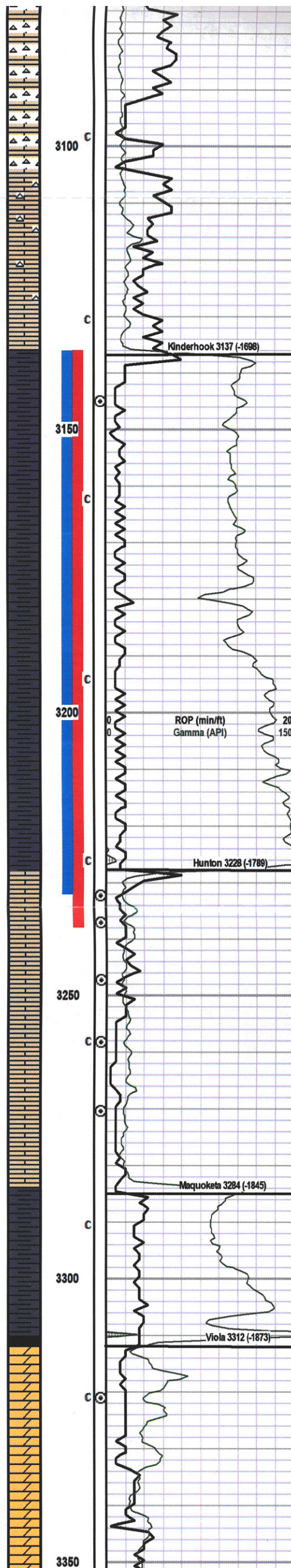
Mud-Co
 Depth: 2717'
 Wt. 9.3
 Vis. 50
 Filtrate 8.8
 Chi 1,100
 LCM 1#

VIS: 45
 WT: 9.2#
 LCM: 2#



2800
 0 ROP (min/ft) 10
 0 Gamma (API) 150
Pawnee 2795 (-1356)
 LS - cream to lt grey, tan, sl green hue in some; partly argillaceous, fine-med xln; occ foss, mst blocky & dense; trc chalky
 SH - black, carb & v dense
Ft. Scott 2822 (-1383)
 LS - cream -tan, brown, fine to microxln (micrite) few pcs w/ sl green hue; oa v. dense & blocky w/ no vis por
 LS - aa, few pcs w/ sl re-xln dev ip; few sub-cherty
Cherokee SH 2836 (-1387)
 SH - few black, carb & abundant varicolored grey, yellow, maroon, green, etc, some mottled; mostly soft & sticky/gummy; few LS -tan-brwn, argillaceous w/ sl green hue; fine to microxln ip w/ few foss; dense
Burgess Sand 2852 (-1413)
 SS - few clusters; white, fn - med grained, sub angular; white matrix; trace show free oil ip w/ spotted yellow fluor; inst streaming cut; weak cup odor
 SS - abundant clusters, white to lt green hue; fn-med grained, sub rnd-ang, fairly sorted (sm larger grains) few w/ glauconitic & pyritic incl; oa good friability; ssfo (light) in tray, increase on break w/ fr-good odor; inst streaming cut; oa good show
 SS - few clusters as above; most glauconitic w/ decrease friab & show; flood varicolored shales; sl dense ip, mottled ylw, green, purp; ~50% CH - varicolored w/ sm mottled (same colors as shales) vitreous, sharp & fresh; trace Dol - lt tan, med xln, rare pcs
 Scale Change
 0 ROP (min/ft) 20
 0 Gamma (API) 150
Mississippian 2916 (-1477)
 *sample pulverized; appears varicolored vitreous chert; flood large shale cavings
 LS - white, cottony txture w/ sl ylw - lt brown stn in part; appears sl dolomitic & cherty; good friability w/ fair intraxln porosity; no odor, ns: ~50% shales & cherts remain - cavings
 LS, CH & Chty LS; white to cream, vitreous to cottony txture; sl foss ip, mst good friab w/ poor - fair vis por; flood sky blue chalky, sticky shale w/ few edge contacts; no odor, ns
 LS - most white, few cream, med xln; sl granular txture; highly chalky; v. soft crush, scattered chalky material; few pcs white vitreous CH, few sl weathered txt
 LS - offwhite & Cherty LS, med xln w/ cottony texture in most; good friab in mst w/ fairly soft crush; few pcs more vitreous CH w/ sl increase density; abdt chalky, ns
 LS & Chty LS, aa, no significant changes; few pcs w/ sl gils stn ip; ns
 LS - cherty, cream w/ granular to cottony txture; sl dolomitic app, trans CH - white, sl foss ip, smooth vitreous txture w/ sharp edges; brittle to sl dense in sm; sl fractured
 CH - white to lt grey, vitreous in most; foss in part (app spic) few weathered to sub-trippolitic; few lt bm edge staining; few glauconitic & pyritic in few, no odor, ns
 CH - varicolored, ylw - green, maroon, sm foss, vitreous in most; trans pcs to LS - cream to tan, fn-med xln, blocky & foss; flood shale - varicolored & mottled; some dense (cavings ?)
 CH - mst white, vitreous, sm weathered, few cream, limey & partly foss; some transitional pcs; occ varicolored chert; foss, vitreous & glassy, abdt sh cavings - sm large silvers
 CH - aa, some w/ cottony texture; appears dolomitic ip; trans cream, dolomitic app, sucrosic txture, mod soft crush; poor to fair vis porosity; no odor, ns, abdt sh cavings - sm large silvers
 CH - white to translucent - vitreous to weathered w/ cottony txture ip, sm dark speckled, few pyritic bands; trans & marbled LS, cream, med xln -sucr to dolomitic; abdt sh cavings - sm large silvers
 CH - v. similar aa, increase weathered & pcs w/ marbled LS; abdt sh cavings - sm large silvers
 CH - white, trans to opaque, vitreous to weathered, sm foss, cottony txt in some, few pyritic xln dev; few pcs fractured w/ dark stn; sm marbled LS - cream to tan, med xln, sucr; abdt sh cavings; large silvers
 CH & LS, chert - wht to opq, vitreous, foss ip, sm weathered w/ cottony txt, pyritic ip; few fractured w/ dark stn; sm marbled w/ LS - cream to tn, med xln w/ sucr txt app dolomitic; no

2800
 DST #1 Burgess Sand
 Interval: 2838'-2860'
 (22') Anchor
 15-30-15-30
 IF: sb built to 123"
 IS: wk sfc bb
 FF: built to 75"
 FSI: 6" bb
 SIP: 766-767#
 IF: 150-386#
 FF: 396-534#
 Hydrostatic: 1426-1403#
 BHT: 107 F
 RW: 0.147 @ 56.4 Deg
 2850
 Recovery: 1200'
 65' GIP
 260' GVSO&HMCW (15% G 4% O 47% W 34% M)
 940' GOSSMCW (4% G 1% O 88% W)
 PDC Bit after DST #1
 VIS: 46
 WT: 9.4#
 LCM: 2#
 2900
 20' samples from 2860-2920
 Mud-Co
 Depth: 2938'
 Wt. 9.4
 Vis. 51
 Filtrate 8.0
 Chl 1,300
 LCM 3#
 2950
 3000
 VIS: 43
 WT: 9.4#
 LCM: 3#
 3050



CH - white to translucent; sl foss, vitreous to sl trippolitic ip w mostly edge weathering & partial stn; pyritic dev edges; some LS - cream, med xln suc; friable ~75%< SH cavings

LS - cream, med xln suc; chalky break; soft crush; CH, vitreous to weathered (cottony app, sl cream cl); v. sim aa; 70/30 LS/CH ratio, ~70% SH cavings

LS - cream to off wht-few lt green hue; med xln w chalky bxture, sm lt brn mnri stain; few pcs appear dolomite, fine xln suc; some CH remains, white to sl opaque, vitreous & blocky, ~60%SH cavings

Flood LS - cream, med xln, chalky & v. friable; sm marbled fine xln, sl foss ip; 10% CH aa, V significant reduction in SH cavings ~10% remains

LS - cream to lt tan, pred med xln w chalky bxture, few fine xln, sl foss ip, v. friable oa few pcs w lt green SH contact

Kinderhook 3137 (-1698)

Flood SH - grey to green, mottled ip, few slip, soft to med firm, few blocky; trace lt grey, gummy dissolves

SH - most lt grey, med soft, visible silty; few grey-green (sm mottled) slippery to blocky; trace maroon

SH - lt grey, silty, md soft; few green-grey, some darker w/ mottled green, waxy, some blocky ip; trace pyrite

SH - grey - lt grey; no significant change

SH - lt to dark grey, few frac'd w/ calc banding; med soft; few darker grey to brown

ROP (min/ft) 20
Gamma (API) 150

Hunton 3228 (-1789)

DoI - app lt cream w translucent xln; med-coarse xln w fair -good intraxln porosity; sl cherty in matrix; mod friable; strong odor w / good show med brown free oil; increase on break; bright yellow fluor w/ instant streaming cut

DoI - flood; cream, med to coarse xln w sl cherty matrix; great intraxln porosity w/ fair-good friability; 80% sat'd stain & free oil in tray; heavy oil cut on break; strong cup odor; brght ylw fluor w/ inst streaming cut

CH - white to cream, tripp ip (tan) w/ spotty weathering; trans vitreous, white; boney & dense; LS - cream, fine xln w/ pyritic dev (sm xln, freq) chalky break

CH & LS ; CH-white to tan, mst vitreous & blocky, lithographic w/ sl weathering; few tan - sl to fully trippolitic w/ st'd stain; gsf, incr break; flood chalky LS - dolomitic cream to white; faint odor persists through 3258 cfs stop (60")

CH & DoI, wht to crm, lt tan, vit to sm trip ch, trans tan w/partial stn & sfo; in xln suc dol ip w/ trc sfo, soft crush, sl chky ip 40"; increase DoI-crm, fine xln suc, v. friable w/ ques sto; ques cut w/ dull ylw fluor, forms ring over 30"; few pcs CH-yhw, vit & ool

DoI - crm lt tan, fine xln suc, v. friable, few pc sm vuggy porosity w/ mst intraxln; ns; dull yhw mineral fluor; no cut, v. faint cup odor

DoI - crm, fine xln suc, aa, sl increase vgy porosity; few pcs dark edge stn, appears shale contact; faint cup odor, ns

DoI - crm, fine xln sucrosic w/ good intraxln porosity; abdt vuggy porosity, mod-gd friability; barren porosity; flood chalk - white, soft

Maquoketa 3284 (-1845)

SH - varicolored grey, med firm to sl dense & blocky w/ sm pyritic banding, mottled ip; few pcs lt green/blue

SH - grey to med brown, sm spotted w/ darker brown spots; med soft to few dense; few pcs v. dense & app limey, blocky; sm mottled green-grey (poss cavings)

SH - grey - brown, silty, sl firm to dense; sm blocky; overall dense

Viola 3312 (-1873)

DoI - cm grey, med coarse xln w/ varisized xln dev; sm glauc stn ip; fair-poor intraxln, vgyg & fractured porosity dev; poor fraibility; dense, sl cup odor w/ sl ques fluor; no cut, ns

DoI - mst grey, med -coarse xln w/ varisized xln dev, sm xl rhombic xln growth; few glauc stn & abdt sm pyrite xln dev; good intra xln, & med-ig vuggy porosity; barren w/ trc odor, ns

DoI - mst grey, few crm, most v. similar aa; trans few fine xln, sl sucrosic w/ abdt glauconitic staining & few pcs w/ green hue; trace pc w/ edge shale contact (brwn) ns

DoI - ~50% aa, trans tan to brown, fine xln sucrosic; blocky w/ moderate friability; fair intraxln porosity; trc chalky; no odor, ns

DoI - crm to lt gry, fine xln suc; prevalent black speck; fw pcs w/ translucent xln w/ interbedded sand, wht app; good friability in most w white chalky matrix

VIS: 45
WT: 9.3#
LCM: 3#

Switch to 20' samples @ 3160

DST #2 Hunton
Interval: 3137'-3232'
(96") Anchor 3160
30-30-60-60
IF: wb built to 5"
ISI: no bb
FF: wb built to 9"
FSI: no bb
SIP: 1231-1236#
IF: 21-44#
FF: 47-81#
Hydrostatic: 1538-1530#
BHT: 104 F
Grav: 27.5 API @ 60 Degrees

Recovery: 165' TF
75' CO
80' OCM (17% O 83% M)

3200

DST #3 Hunton
Interval: 3137'-3237'
(100") Anchor
30-30-60-60
IF: built to 17"
ISI: no bb
FF: built to 38"
FSI: 1/2" surface bb
SIP: 1230-1237#
IF: 25-109#
FF: 109-210#
Hydrostatic: 1533-1527#
BHT: 105
Grav: 26.3 API @ ambient Degrees

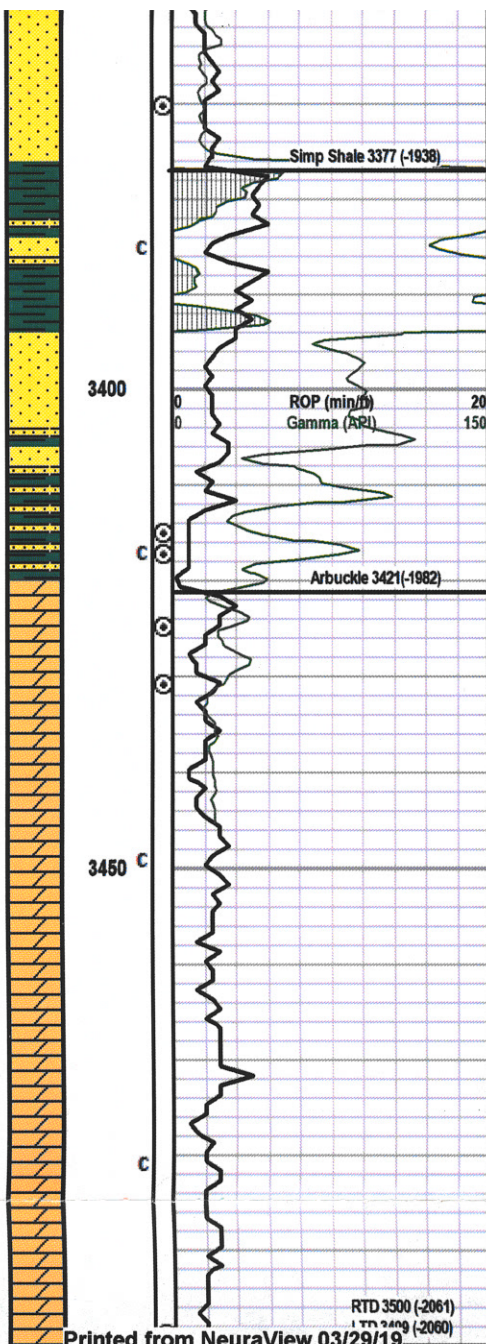
Recovery: 445' TF
165' CO
160' GOCM (8% 3250% O 79% M)
120' OCM (20% O 80% M)

VIS: 41
WT: 9.2#
LCM: 2.5#

Mud-Co
Depth: 3237'
Wt. 9.3+
Vis. 45
Filtrate 8.8
Chl 1,400
LCM 2#

3300

VIS: 51
WT: 9.1#
LCM: 4#



SS - tan to brown app; mst med grains, well rnd & srt'd; good friab in most; clear grains on break w/ tan chalky matrix; no odor, fluor, ns

SS - med to lg clust; mst app cream to tan, few white; clear grains; fine to med grains; well rnd & sorted; some marbled coloring *appears std stain; no fluor no odor, ns; sl chalky matrix; oa gd friability w/ few sl dnse clust

Simp Shale 3377 (-1938)

SS - wht, tan, brown app; fine grained, clear qtz grns, well rnd/srt'd; marbled matrix w/ lt to dark tan app, app stned; matrix color variations; no odor ns; flood SH - grey green brown, soft to dense, blocky, sm mottled

SH - flood grey, gummy & mushy, sm grey, firm blocky, mottled ip, slippery green & varicolored; yellow-red, sandy ip

SS - wht clust w/ abdt black (sh?) incl; w/ rnd/srt w/ good fri, fair-gd intragrnl porosity w/ well cmt'd mtr; abt SH - gry-green, sm blk, mtd ip; soft to firm & blocky; few SS-gry clust w/ abdt shale matrix, blk & glauc incl, no odor, ns

SS - mst white clust, aa, increase glauc & blk inclusions; good friability & intragrnl porosity; barren; ~30% SH - grey green brown, soft to firm, sm dark brown; fissile; few pyritic incl throughout sand & shales

SS - white to lt grey clusters w/ abdt glauc & dark inclusions, few pyrite xln dev (sm loose clusters*, sm sh- lt green, soft, dissolves & few firm, mottled grn-blk; good intragrnl porosity & friab; barren

Arbuckle 3421(-1982)

Dol - brown, fine xln, blocky & dense; mst lithographic, few pcs w/ SS contact, no visible porosity, no odor, nsfo 40"; Dol - crm to brown, fine to med xln; brown aa, trans crm, med xln suc' w/ fair to good friab & intra xln w/ sl vgy porosity ip; barren, few SS contact; no odor, no fluor, nsfo 60" med xln, fw org-pink, fria, barren

Dol - crm to lt tan, pink, mst med xln, gd intraxln & few vgy por, good intra xln por w/ fair to good friability, partly dense, trace chalky, few pc w/ green shale contacts; barren porosity w/ no shows

Dol - crm lt tan, med xln w/ some large & XL xln growth (translucent rhombs) good intra xln porosity w/ scattered large vuggs, poor friability; dense break; barren porosity; no odor, ns, no fluor

Dol - crm to lt tan, mst med xln w/ few fn xln, fair visible porosity w/ decrease in vuggy porosity, increase friability; few pcs w/ marbled wht chert; barren, ns

Dol - cream to tan, few off-white, med xln w/ gd intra foss - sm vuggy porosity, fairly fraible; few pcs CH - white to lt grey, mst vitreous w/ re-xln frags, trace oolitic; sharp & fresh; no odor, no shows/fluor

Dol - crm lt tan, med xln, sl dense ip w/ oa lithographic appearance; few pcs CH - white to lt grey, opq, mst vitreous w/ few edge weathered; poor friab; no odor ns

Dol - cream to lt tan, sl pinkish hue in some; fine to med xln - sucrosic ip; moderately friable w/ fair-gd intraxln por; trace CH - wht & scattered chalky material; no odor, ns

Dol - crm to lt tan, sm brown, most fn-med xln, few re-xln suc & trc vgy porosity; fair-mod friab w/ fair -intraxln por; few CH - white vitreous, heavily ool; trace weatherd ip; no odor, ns

3400

3450

Mud-Co
 Depth: 3500'
 Wt. 9.3
 Vis. 57
 Filtrate 8.8
 Chl 1,100
 LCM 4#