

GRAND MESA

OPERATING COMPANY

(316) 265-3000
FAX: (316) 265-3455

1700 N. WATERFRONT PARKWAY
BLDG. 600
WICHITA, KANSAS 67206-5514

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

Well Name: Grand Mesa Op. Co. #2-9 O'Brien
API: 15-101-22638
Location: 2177FSL 1284FEL Sec 9-T16S-R29W Lane County Kansas
License Number: Region: Not Named
Spud Date: 11/11/2019 Drilling Completed: 11/18/2019
Surface Coordinates: Lat: 38.676736
Long: -100.52753
Bottom Hole Vertical hole
Coordinates:
Ground Elevation (ft): 2662 K.B. Elevation (ft): 2667
Logged Interval (ft): 3600' To: 4311 Total Depth (ft): 4311
Formation: Marmaton (Excello Shale)
Type of Drilling Fluid: Chemical

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

OPERATOR

Company: Grand Mesa Operating Company
Address: 1700 N. Waterfront Parkway
Bldg. 600
Wichita, KS 67206-5514

GEOLOGIST

Name: Steven P. Carl
Company: Independent
Address: 724 Lakecrest Dr.
Andover KS, 67002

FORMATION TOPS

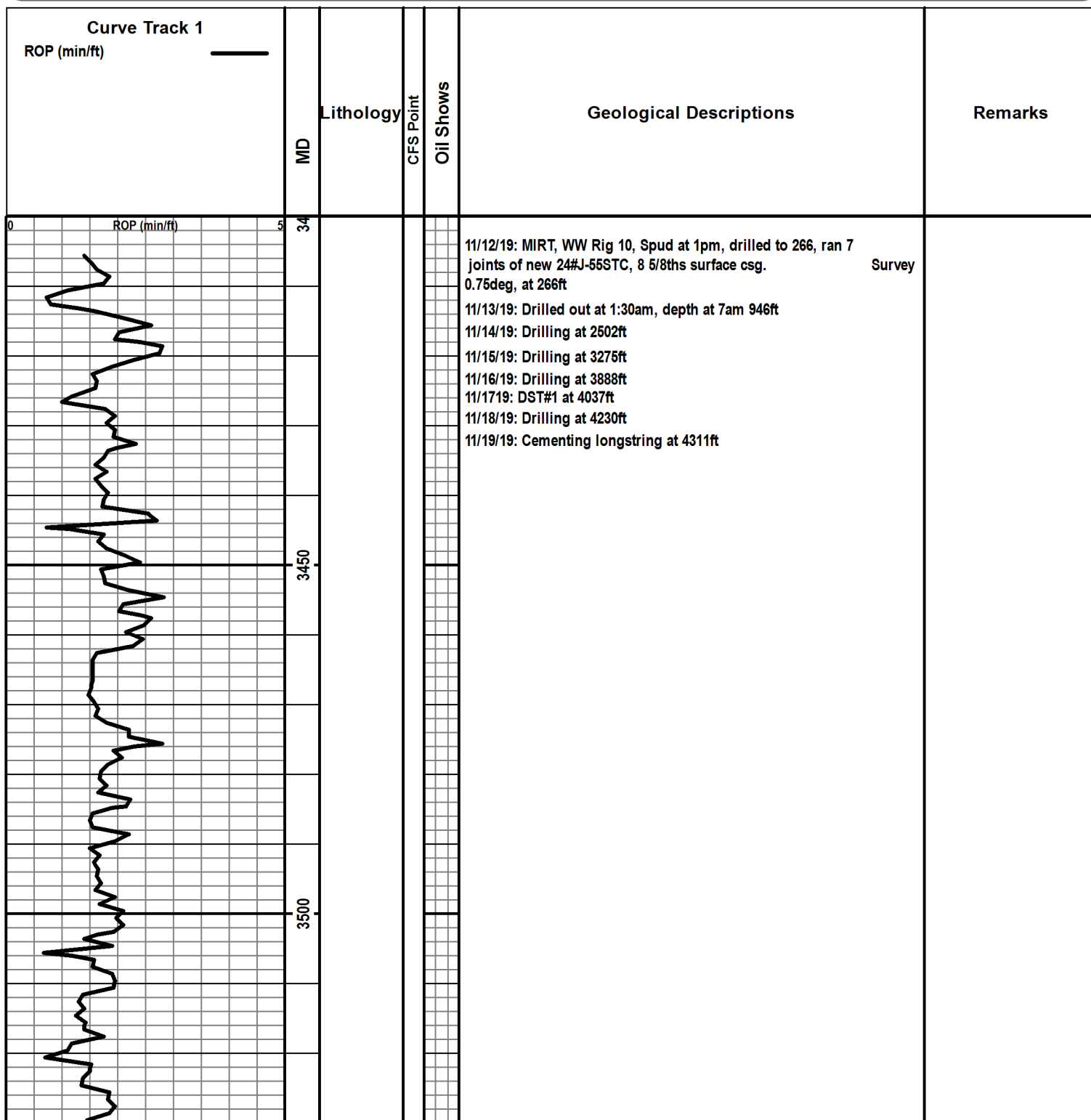
FORMATION	LOG TOPS Depth	Datum
Stone Corral	2060'	+607
B/Stone Corral	2090'	+577
Heebner Shale	3751'	-1084
Lansing	3786'	-1119
Muncie Creek Shale	3950'	-1283
Stark Shale	4049'	-1382
Hushpuckney Shale	4083'	-1416
Marmaton	4159'	-1492
Little Osage	4276	-1609
Mississippian	NOT PENE	

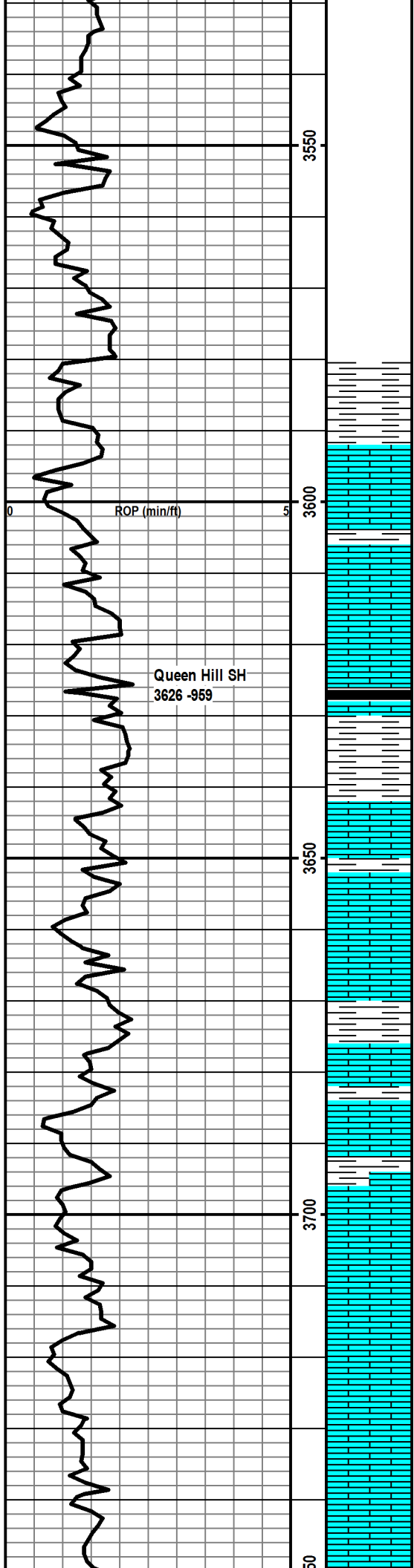
RTD
LTD

4311' -1644
4312' -1645

COMMENTS

Contractor: Murfin Rig #110
Pusher: Rick Hilgers
Surface Casing: 259ft, set at 266ft from KB
Production Casing: 5 1/2" set at 4309ft
Mud by: MudCo
DST's by: Diamond Testing
Logs by: ELI (DIL, CN-CD, ML, SON)
RTD=4311ft
LTD=4312ft





LITHOLOGIC LOG corrected to the E-log.

10 samples start at 3610.

LS-drk gry/brn, med xln, foss, mealy, few chips of DOLO-lt tan, fine xln, hard, sample smells like diesel fuel.

LS-mostly dark gry/brn, crs xln, mottled, foss-crin/bryz, scat poor int foss/xln por, few pcs SH-blk, carb, no cup odor, ns.

LS-med gry/tan, mostly med-crs xln, mealy, foss-crin/ brach/coral, no vis por, no fluor, no cup odor, ns.

LS-med to lt gry/tan, mealy, foss as above, scatt poor int foss/xln por, no fluor, no cup odor, ns.

SH-black carb in 3650 sample, bleeding gas bubbles.

LS-med to lt tan, mealy, foss, some chalk, no vis por, no fluor, no cup odor, ns.

LS-med to lt gry/tan, crs xln, foss as above, scat poor int xln/foss por, no vis por, no fluor, no cup odor, ns.

No change.

LS-lt tan/crm, med xln, mottled, mealy, foss, influx CHERT-lt orange, foss, sharp, fresh, no vis por, no fluor, no cup odor, ns.

As above, incr in chalk, decr in chert, no vis por, no fluor, no cup odor, ns.

LS-lt tan/crm, crs xln, foss-brac/brzy/crin, mealy, chalky, some CHERT, no vis por, no fluor, no cup odor, ns.

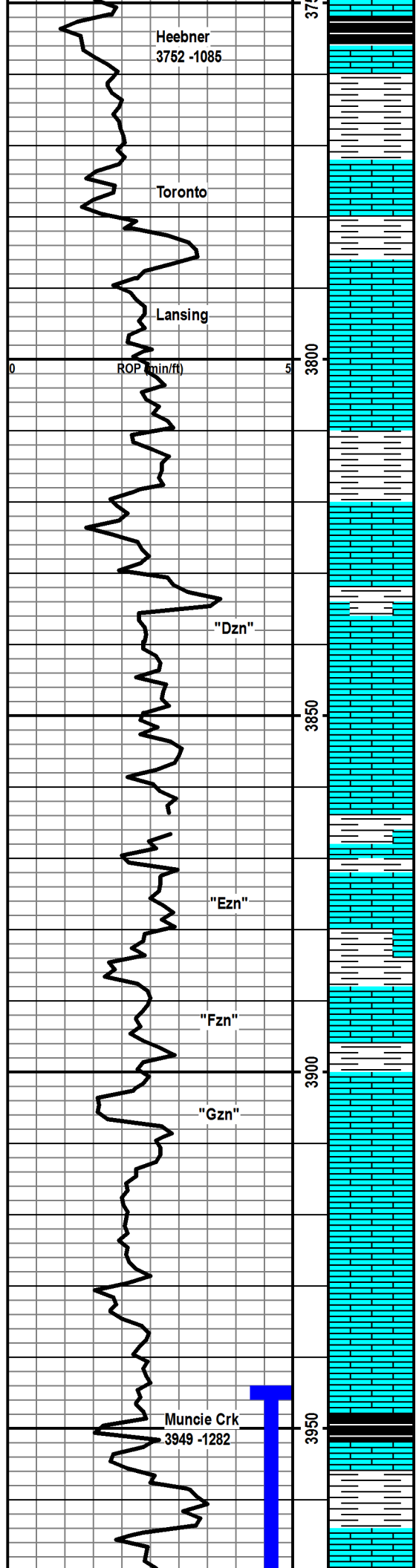
LS-med to lt tan, fn xln, dense, uniform, decr LS as above, incr chalk, incr chert, no vis por, no fluor, no cup odor, ns.

LS-lt tan, med to crs xln, mealy, foss-brzy/fus/crin, chalky, no vis por, no fluor, no cup odor, ns.

Mostly as above, abund chalk, no vis por, no fluor, no cup odor, ns.

LS-lt tan/crm, some crs xln, some fn xln, mostly very foss-crin/fus, some chalk, one pc ool with poor int ool por, some fluor in por, I could not break out any free oil, no cup odor.

No change, no vis por, no fluor, no cup odor, ns.



HEEB SH-blk carb, abund in 3770 sample.

20min sample: LS-med to lt tan, mottled, crs xln, foss, chalky, few chert, no vis por, no fluor, no cup odor, ns.

45min sample:LS-lt gry/tan, fn xln, dense, foss-fus/coral /bryz, abund chert, no vis por, no fluor, no cup odor, ns.

20min sample: LS-crm/wht, fn xln, mostly uniform and chalky, abund ool, all int ool por filled with calcite, no vis por, no fluor, no cup odor, ns.

45min sample: LS-lt to med gry/crm, uniform, dense, hard, decr chalk, no ool, no vis por, no fluor, no cup odor, ns.

LS-lt crm/wht, fn xln, mostly uniform, dense, hard, abund chert-gry, foss-fus, no vis por, no cup odor, no fluor, ns.

20min sample: LS-crm, fn xln, dense, rare ool, no vis por, no fluor, no cup odor, ns.

45min sample: LS-crm, fn xln, mostly uniform, dense, some chalk, no vis por, no fluor, no cup odor, ns.

20min sample: LS-lt crm, fn xln, mostly uniform, dense, hard, no vis por, no fluor, no cup odor, ns.

45min sample: LS-crm to lt tan, fn xln, mostly uniform, incr chalk, flaky/mealy matrix in some, no vis por, influx med gray SH-brittle, fissile, no fluor, no cup odor, ns.

LS-lt tan/crm, fn xln, mostly uniform, some foss-coral/ gas, some with chalky matrix, no vis por, no fluor, no cup odor, ns.

20min sample: LS-lt crm, fn xln, mostly uniform, v chalky, no vis por, no fluor, no cup odor, ns.

45min sample: LS-crm, fn xln, mostly uniform, decr chalk, few ool with calcite filled int ool por, no vis por, no fluor, no cup odor, ns.

LS-crm, fn xln, mostly uniform, dense, hard, brittle, sm LS-crm, crs xln, chalky, foss/ool, no porosity, few pcs OOC with good ooc por, SH-drk gray/black, fissile, brittle, no fluor, no cup odor, ns.

LS-mostly as above, influx of chalk, no vis por, no fluor, no cup odor, ns.

LS-gry, some crm, fn xln, mostly uniform, dense, hard, decr chalk, sm LS-crm, foss as above, no vis por, no fluor, no cup odor, ns.

Mix of several LS's as above, sm LS-med to lt gry, fn xln, dense, foss, no vis por, no fluor, no cup odor, ns.

SH-blk, carb, present in 3970 sample, LS-med gry, fn xln, dense, hard, no por, no fluor, no cup odor, ns.

LS-med to drk tan, fn xln, dense, hard, brittle, rare crs xln, with poor int xln por, some chert-brn, foss, no vis por, no fluor, no cup odor, ns.

30min sample: LS-med tan, mostly mottled/foss, some chalky, few chert, no vis por, no fluor, no cup odor, ns.

CIRC @ 3780
45mins

CIRC @ 3802
45mins

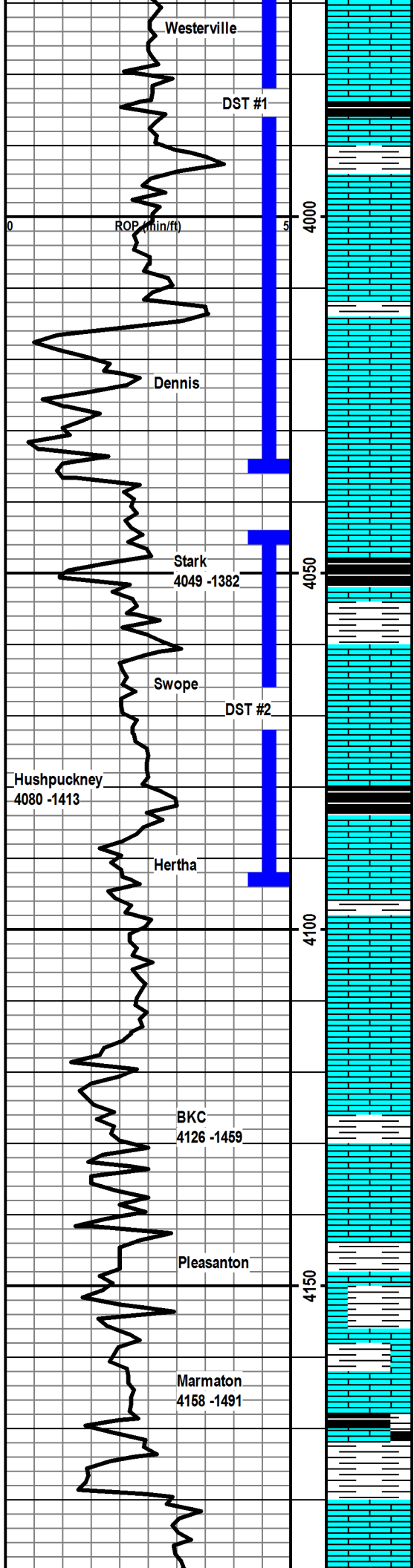
No 3810 sample

CIRC @ 3830
45mins

CIRC @ 3860
45mins

CIRC @ 3895
45mins

DST #1
3944-4037ft
Rec:
100ft Mud - SSO
120ft HWCN - SSO
16-87# 91-116#
817-795#



45min sample: LS- mostly as above, 3-4 pcs per tray with chalky texture, poor int xln por, with VSSFO on crushing of the chip, very faint cup odor.

Mix of several LS's- mostly LS-med tan/gry, chalky texture, dense to flakey matrix, few pcs chert, no vis por, no fluor, no cup odor, ns.

30min sample: LS-frm to lt tan, fn xln, mostly uniform with a chalky matrix, few pcs per tray foss/ool with poor int foss por, VSSFO on crush, fair cup odor, scat fluor in wet.

60min sample: same, weak show, faint cup odor.

no ooc lith in 4030 or 4037 sample

30min sample: LS-lt to med brown, micro xln, profus ooc, scat fluor- both mineral (calcite), chalk and spots of oil, SSFO on break, faint cup odor, lots of white chalk.

60min sample: as above, abundant chalk.

4050 sample is trip trash

LS-med tan, fn xln, uniform to abund foss, rare ool, dense, no vis por, no cup odor, no fluor, ns.

SH-black, carbonaceous, NOT present in 4060 sample, abundant in 4070 sample.

20min sample: LS-tan, med xln, uniform to foss, no vis por, no cup odor, no fluor, ns.

40min sample: incr chalk, few pcs LS-gry, profus ool, all por filled with calcite, no vis por, no cup odor, no fluor, ns.

60min sample: no change, no vis por, no cup odor, no fluor, ns!

One chip in the 4090 sample with poor pp por, VSS dark brown FO, will NOT break out of por, brt fluor, no cup odor.

Few chips of SH-black, carb in 30min sample, LS-mostly med gray, fn xln, dense, chert-lt gray, no vis por, no cup odor, ns.

60min: LS-med brn, micro xln, extremely hard, 1-2 pcs per tray with poor pp por, VSS drk brn FO will break out of por, very faint cup odor.

4120: LS-lt tan/frm, fn xln, some grainy, mostly uniform, dense, no vis por, cup has v faint odor, very rare tiny droplets of v lt oil in tray, seen only with fluoroscope.

30min sample: LS-lt tan, fn xln, dense, brittle, no vis por, no cup odor, no fluor, ns.

60min sample: LS- mostly as above, influx DOLO- lt tan, fn xln, suc, dense, hard, no vis por, no cup odor, no fluor, ns.

LS-med tan, fn xln, uniform, dense, hard, no vis por, no cup odor, no fluor, ns.

LS-tan, micro-fn xln, mostly dense, hard, some chalky, one pc with poor pp por VSSFO and faint odor on break, no cup odor.

LS-med tan, fn xln, mosly uniform, some foss, some chalky, few pcs DOLO-lt tan, fn xln, suc, v hard, dense, no vis por, no fluor, no cup odor, ns.

No change

LS-lt gry, med xln, foss, some chalky, some chert, no vis por, no fluor, no cup odor, ns.

LS-lt tan, fn to med xln, mostly uniform, dense, brittle, few chips of DOLO as above, no vis por, no fluor, no cup odor, ns.

LS-mostly as above, decr DOLO, no vis por, no fluor, no cup odor, ns.

LS-lt tan, fn xln, dense, brittle, influx of sticky chalky mudstone, no vis

CIRC @ 3980
45mins

CIRC @ 4008
60mins

CIRC @ 4037
60mins

DST#2
4045-4093ft
Rec:
2ft Oil
205ft SOCWM
14-71# 74-105#
244-241#

CIRC 4074
60mins

CIRC 4093
60mins

CIRC 4121
60mins

Autodriller malfunctioned between 4120-4156, Drill time is inaccurate!

