

# GRAND MESA

# OPERATING COMPANY

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

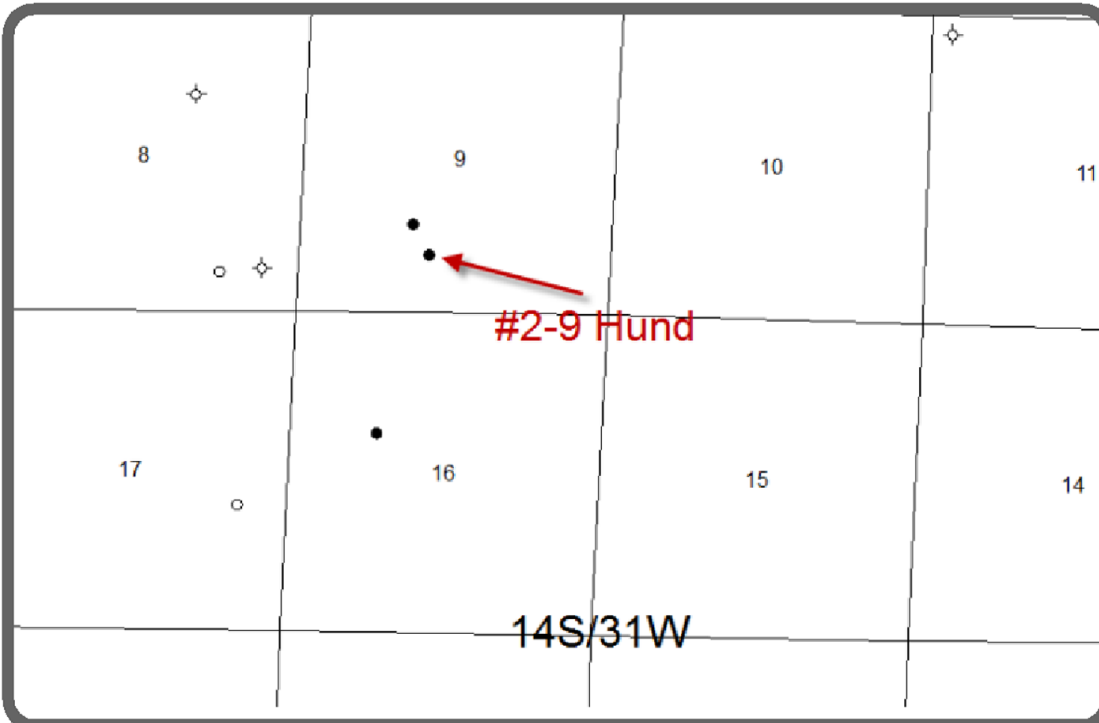
Scale 1:240 (5"=100') Imperial  
Measured Depth Log

Well Name: #2-9 Hund  
Location: 977'FSL, 2188'FWL Sec 9-14s-31w Gove County Kansas  
License Number: API: 15-063-21908 Region: Wildcat  
Spud Date: 5-3-2011 Drilling Completed: 5-12-2011  
Surface Coordinates: Lat: 38.8475961  
Long: -100.7722526  
Bottom Hole Vertical hole  
Coordinates:  
Ground Elevation (ft): 2931 K.B. Elevation (ft): 2936  
Logged Interval (ft): 3600' To: RTD Total Depth (ft): 4744'  
Formation: Mississippian at RTD  
Type of Drilling Fluid: Chemical

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

## GEOLOGIST

Name: Steven P. Carl  
Company: Grand Mesa Operating Company  
Address: 1700 N. Waterfront Parkway, Bldg 600  
Wichita, Kansas 67206  
316-256-3000



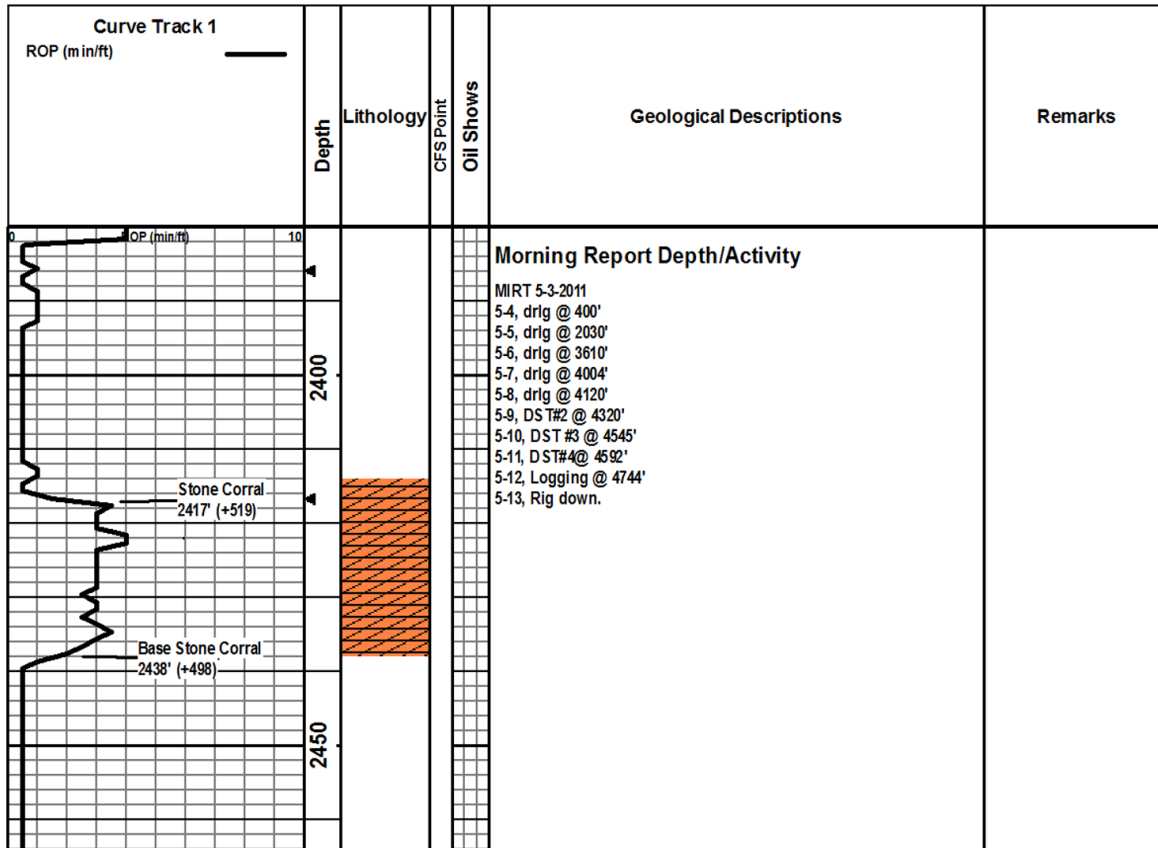
## COMMENTS

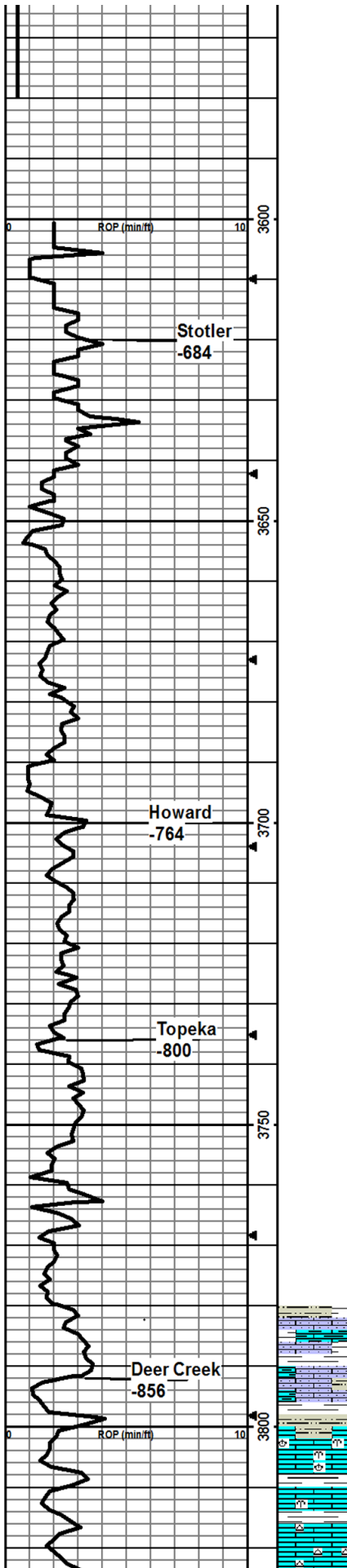
Contractor: Murfin Drilling Company Rig #24  
Pusher: Tony Martin  
Surface Casing: 8 5/8" set at 222' w/165sx  
Production Casing: 5 1/2" set at 4740', to further test the Ft. Scott and Johnson zones.  
Mud by: MudCo  
DST's by: Superior Testing

Logs by: Weatherford (DIL, CN-CD, ML)  
 RTD=4744'  
 LTD=4740'

**FORMATION TOPS**

	Sample Tops		Log Tops	
Stone Corral	2417	519	2413	523
B/Stone Corral	2438	498	2434	502
Heebner	3953	-1017	3954	-1018
Lansing	3997	-1061	3993	-1057
Muncie Creek	4154	-1218	4151	-1215
Stark	4247	-1311	4243	-1307
Hushpuckney	4282	-1346	4279	-1343
Marmaton	4352	-1416	4352	-1416
Little Osage	4468	-1532	4464	-1528
Excello	4495	-1559	4489	-1553
Johnson	4567	-1631	4564	-1628
Morrow	4590	-1654	4585	-1649
Mississippian	4630	-1694	4624	-1688
St. Gen	4630	-1694	4624	-1688





Bit trip @ 3610'  
 Survey = 3/4 degrees  
 Too windy for strap.

Strap at 4058 yeilds 1.60' short to board.

ROP Data begins @ 3600'

Geologist on location 3640' @1:10pm Friday 5/6/2011

10ft Samples begin at 3800ft.

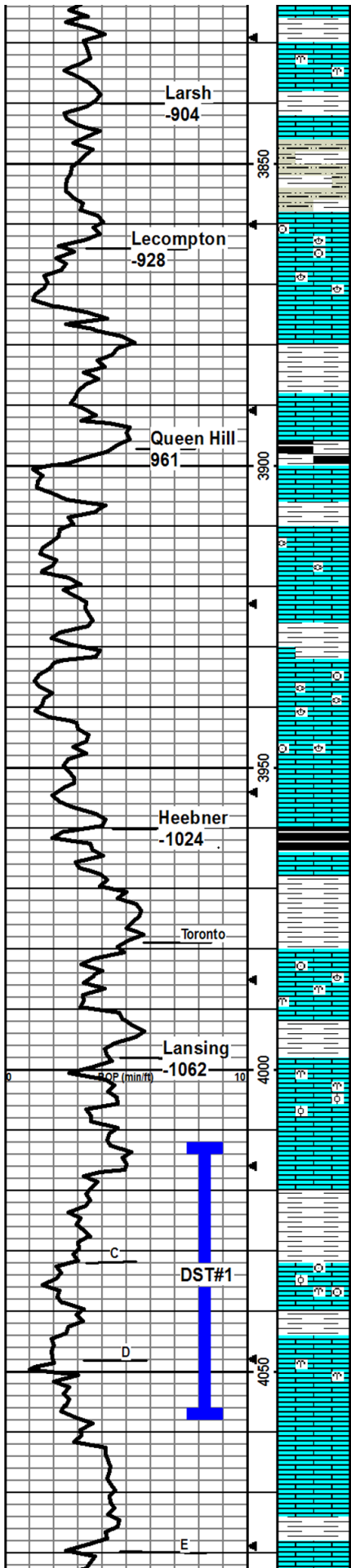
LS-med gry, med xln, grainy, shaley, easy crush, foss-crin, flecks of blk, flakey gilsonite, gd fluor when cut, nvp, no odr, abund SH-gry, silty, nsfo.

LS-ft tan, fn xln, brittle, dense, med crush, foss-crin, nvp, no odr, SH as above, ns.

LS-ft tan/crm, med-crs xln, profus foss-various, mealy, med crush, abund chalk, fr int foss por, no odr, scat m in fluor, ns.

LS-ft tan/crm, mostly fn xln, dense, hard, uniform, sm foss as above, abund chert-ft tan, foss, op, abund chalk, nvp, no odr, ns.

LS-shale abund chert as above, SH-gry, med waxy, med silty,



LS-as above, abund chert-as above, sm-gry, sm waxy, sm silty.

LS-med tan, fn-med xln, grainy, foss-crin/bryz, med crush, scat pr int xln por, abund chert-gry, op, no cup odr, no fluor, ns.

LS-med gry, vfn xln, dense hard, brittle, no por, ns.

SS-lt gry, vfn grn, argil, muddy, v soft, sticky, chalky, no cup odr, ns.

LS-med tan, med xln, foss-brach/crin/various, chalky, easy to med crush, nvp, no cup odr, ns.

LS-med-lt gry, med xln, foss, mostly dense, med-diff crush, nvp, no odr, ns.

SH-mostly gry, firm fiss, waxy, sm brn/red, soft, silty, no cup odr, cup water dirty red/brn, ns.

SH-lt tan, med xln, foss-various, brittle, sm chalk, scat int foss/xln por, no odr, no fluor, ns.

LS-lt gry/tan, fn xln, dense, med-diff crush, mostly void of foss, micritic, nvp, no cup odr, ns.

SH-med-drk gry, few carb.

LS-lt tan/crm, fn xln, mostly uniform, few foss-fus, sm chalk, mostly dense, w/nvp, few pcs chert-gry, transl, foss, no cup odr, no fluor, ns.

SH-gry/blk, foss.

LS-lt gry/tan, med xln, profus foss-fus/brach/bryz/crin, mealy/grainy, abundant chalk, cup water chalky gry, scat int xln/foss por, no odr, ns.

LS-med tan, med xln, foss as above, chalky, few pcs chert, dense, nvp, no cup odr, no fluor, ns.

SH-blk, carb, fissile, waxy, few pcs in 3970 smpl, flood in 3980 sm pl.

SH-gry/lt grn/brn/red, sm silty, all soft, rounded.

LS-crm, fn xln, dense, med-diff crush, mostly uniform, sm foss-crin/brach/fus, sm chalk, few pcs ool, abund chert-gry, transl, nvp, no odr, ns.

MUDSTN-red, v soft, sm pl cup water dirty red.

LS-crm, fn xln matrix, ool/foss-various, mostly dense, sm chalky, one pc per tray w/spotty fair int ool por, fair show drk fo, no cup odr, no fluor.

LS-crm, fn xln, ool as above, dense, brittle, nvp, no cup odr, ns.

SH-predom gry, firm, sm silty.

SH-as above, waxy.

LS-crm-lt tan, fn xln matrix, mostly dense, uniform, few ool/foss-bryz/crin, 4-5pcs per tray w/scat fr int foss por, pale blu stream ing cut, ssfo, bleed on break, fnt cup odr,

SH-red/brn, soft, cup water dirty red.

LS-crm, fn xln matrix, mostly dense/uniform, sm v foss-various, few pcs per tray w fr in foss por w/vssfo, few pcs w/chalky matrix, patchy lt brn stn, cuts weak-pale blu, no cup odr.

4070smpl mostly trip trash, sm LS-as above, mostly dense, nvp, no cup odr, ns.

LS-lt tan, micro xln, sm sparry, vit luster, rare foss, rare ool, dense, hard, diff crush, sm chalk, nvp, no odr, spotty m in fluor, ns.

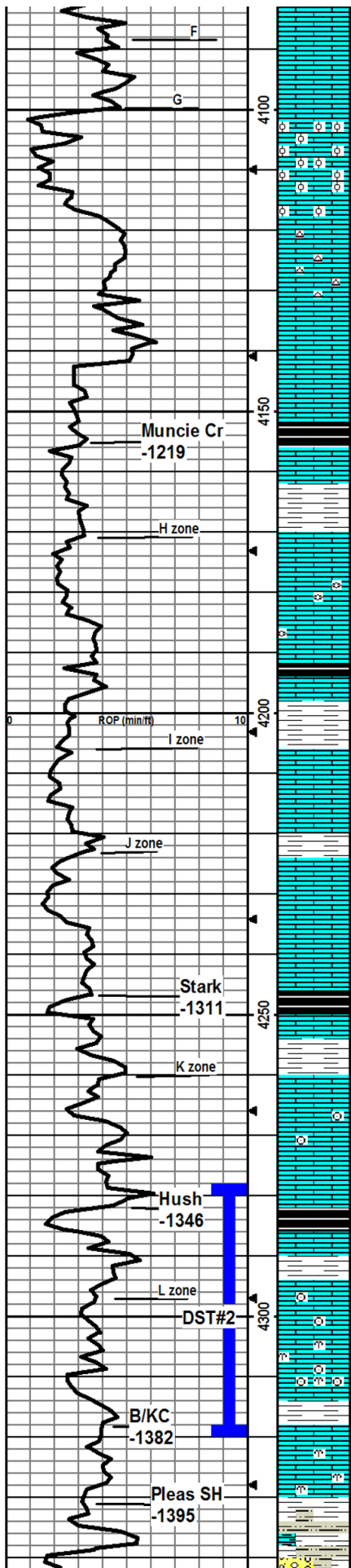
SH-gry, brittle, fissile

LS-lt tan/crm, mostly fn xln matrix, sm crs/sparry, rare foss, dense

**DST#1**  
**Lansing C-D**  
**4012'-4057'**  
**15-15-15-15**  
**Rec: 5' OSM**  
**IFP: 51-66#**  
**FFP: 59-64#**  
**ISIP: 990#**  
**FSIP: 943#**

Strap on DS T#1  
 1.60' Short

Mudco: 4040'  
 wt: 8.8  
 vis: 54  
 yp: 23  
 pH: 11.0  
 flt: 6.4  
 chl: 3800  
 lcm: 2



hard, med-diff crush, few pcs chalk, abund chert-wht, opaque, no cup odr, scat min fluor, ns.

LS-t tan, micro xln, sparry, hard, brittle, foss-various, rare ool-densely packed w/nvp, few pcs chert-wht, op, nvp, no cup odr, ns.

LS-med-t tan, micro xln, profus ooc, foss, easy crush, min fluor from spar, no cup odr, ns.

LS-crm, micro xln, sparry, dense ool/foss, nvp, chert-wht, milky, abund SH??-blk, not carb, fissile, brittle, no cup odr, spotty min fluor, ns.

LS-as above, smple predom SH as above, working on mud properties.

LS-gry, fn xln, uniform, rare foss, dense, hard, nvp, no cup odr, ns.

SH-blk, carb, present in 4170 sample.

LS-tan/gry, mottled, fn xln, mostly dense/hard, sm easy-med crush, chalky matrix, sm sparry, abund frags faces stn'd w/dead oil, cuts pale blu, scat dul fluor, vssfo in pr fr int xln por, will not break out, no cup odr.

SH-red/gry/purple/grn, waxy.

4184 30min-LS-t tan/gry, sm med tan, fn xln, mostly uniform, chalky, sm med xln/sparry, rare foss, rare pisolitic, rare pr int xln por, no cup odr, ns.

60m-LS-t gry, fn xln, mostly uniform, rare foss-various/fus, mostly dense/hard, med crush, sm chalky/flakey matrix, easy crush w/pr int xln por, sm chert-gry op, foss-fus, no cup odr, scat min fluor, ns.

LS-med-drk tan, fn xln, micritic, foss, vdense/hard, nvp, no cup odr, ns.

SH-predom gry, sm red/brn, rare silty.

LS-gry, fn xln, mostly uniform, chalky, pr int xln por, spotty brn stn, pale blu wicking cut, no cup odr, nsfo.

LS-as above, nvp, no odr, ns.

SH-gry/brt red/orn, few SS clusters, pyritic.

LS-crm, vfn xln, sm sparry, sm chalky matrix, mostly uniform, rare foss, dense w/nvp, no cup odr, ns. Sm pl predom SH sluff. Running tank of mud to improve vis.

SH-blk, carb, present in 4260spl.

SH-predom red/brn.

LS-t gry, fn xln, uniform, dense, brittle, rare foss, nvp, no cup odr, no fluor, rare (one pc in 3 trays) por int xln por, vssfo, will not break out of por.

LS-t gry-wht, fn xln, chalky, drk gry min indus, sm LS-gry, crs xln, foss-crin, few pcs chert-gry, transl, nvp, no cup odr, ns.

SH-blk, carb, flood in 4300 spl.

LS-brn/tan, micro xln, dense, hard, foss, sparry, nvp, ns.

SH-gry.

LS-med-t tan, fn xln, foss, sparry, sm crs xln w/lrg calc spar, all dense, few pcs chalk, nvp, no cup odr, no fluor, ns.

LS-tan/gry, fn xln, uniform, vdense/hard, nvp, ns. LS-drk tan/brn, micro xln, sparry, foss, nvp, ns. LS-gry, med-crs xln, foss, silty chalky, rare pr int xln por, no cup odr, scat min fluor, ns.

LS-t tan, crs xln, profus foss, spar filled int foss por, several pcs per tray w/pr int foss por, ssfo in al l por, fnt cup odr, odr on break, brt yel fluor and streaming cut.

LS-gry-tan, med xln, drk min inclus, chalky, foss, dense, nvp, no cup odr, ns.

SS/SLTS TN CONG-t blu/gry, vfn grn, firm clusters, arg, clay cement, sm v soft/muddy/sticky, no cup odr, ns.

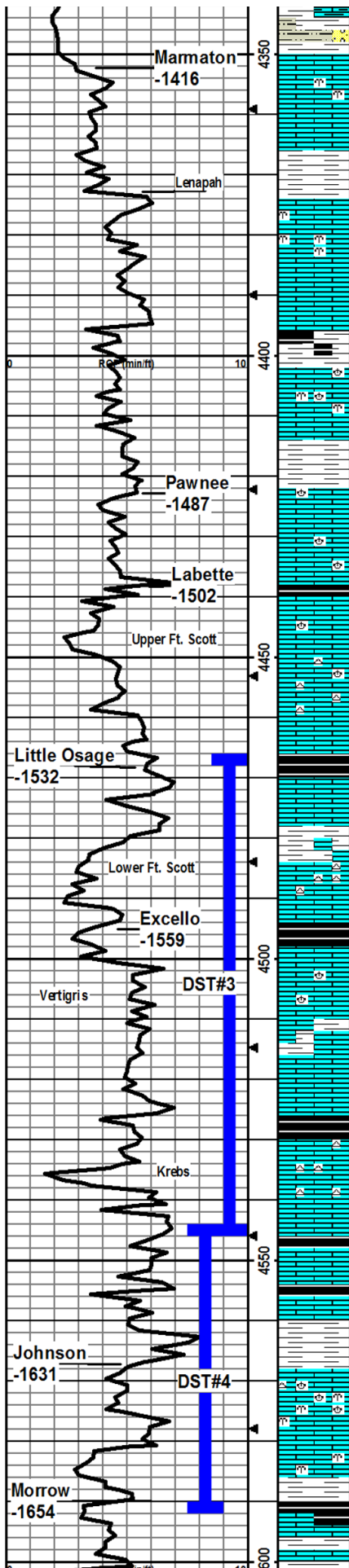
Mudco: 4173'  
wt: 9.2  
vis: 55  
yp: 20  
pH: 10.5  
filt: 6.8  
chl: 3900  
lcm: 2

Samples are still predom shale. Circ 45m ins at 4270 to run in tank of new mud.

Samples much improved at 4280'

DST#2  
Lansing L  
4278'-4320'  
30-45-30-45  
Rec:  
3' Cln Oil  
42'SOCWM  
189'SOCMW  
IFP: 53-135#  
FFP: 264-256#  
ISIP: 1188#  
FSIP: 1188#





SS-as above, SH=gry/red/brn, soft, muddy/sticky.

LS-gry/tan, fn xln, foss-bryz/brach/spic, dense/hard, sm sparry, nvp, no odr, ns.

LS-as above, mostly uniform, decr foss, no odr, ns.

SH-gry/red/brn, sm silty.

LS-lt tan, micro xln, sparry, foss-brach/ bryz/fus, dense, hard, nvp, no fluor, no odr, ns.

LS-med-lt tan, fn xln, mostly uniform, sm chalk, sm sparry/foss-brach-spir/various, dense, hard, nvp, no odr, no fluor, ns.

SH-predom gry, sm blk, carb, LS-as above

LS-gry, fn xln, uniform, chalky, dense, med-diff crush, nvp, ns.

LS-med tan, fn xln, foss-various, v dense, diff crush, int foss por filled w/calcite, nvp, ns.

LS-gry as above, LS-drk tan/brn, crs xln, foss, v dense, hard, nvp, no odr, ns, SH-med-drk gry, silty, cong.

LS-tan, micro xln, foss-various, v dense, hard, nvp, no odr, no fluor, ns.

LS-tan, fn-med xln, foss as above-coral/brach, nvp, ns.

SH-few pcs blk, carb.

LS-much as above, gry, fn xln, uniform, rare foss-fus/brach, rare densely packed ool, all dense/hard, influx chert-wht, opaque, nvp, no odr, ns.

LS-gry, fn xln, dense hard, uniform, few pcs LS-tan, crs xln, abund chert-lt gry/wht, opaque, few foss, nvp, ns.

LS-tan/gry, mostly fn xln, mostly uniform, sm grainy, sm foss, all dense, hard, nvp, no cup odr, ns. SH-blk carb.

SH-predom gry/red/brn, few pcs blk, carb, no cup odr, ns.

LS-gry, micro-fn xln, v hard, dense, uniform, rare chalk, sm chert-wht, opaque, few pcs per tray w/scat pr-fr vug por (difficult to see in wets), rare calcite rhombs in vugs, ss lt brn fo in vugs, odr on break, fnt cup odr, scat brt yel fluor along faces, lt brn stn in drys.

SH-blk carb, flood in 4510 sample.

LS-med-lt tan, micro xln, dense, hard, sm foss-brach/spic/ fus, rare ool, sm pyritic inclus, chert-wht, milky, nvp, no cup odr, ns.

LS-tan, micro xln, as above, foss-as above, v dense, nvp, ns.

SH-blk carb.

LS-tan, micro xln, much as above, abund chert as above, sm LS-mottled tan, profus ool, chalky matrix fill int ool por, no cup odr, ns.

4546-60m in-LS-mostly as above, decr ool, nvp, no fluor, no odr, ns.

LS-gry/lt tan, fn xln, v dense, uniform, sm chert, predom SH-med-drk gry, flecks of mica, sm red, silty, abund blk, carb, no cup odr, ns.

LS-med tan matrix, mottled w/drck calcite pis/ool, micro xln, foss-brach-derbia/crin, v dense/hard, nvp, no odr, ns, SH-mix as above.

LS-med tan, micro xln, foss-various, matrix dense w/nvp, many pcs per tray w/good vug por, good sat, bleed med-drk brn fo & gas bub, strng cup odr, v dul to no fluor, gd streaming cut.

LS-lt-med tan, fn-med xln, mostly dense/hard, foss- as above, abund int foss/vug por as above, gsfo on break, strng cup odr, no fluor, gd streaming cut.

Mix, LS-tan, micro-fn xln, dense, hard, nvp, ns. SH-med gry, silty, red/brn, no cup odr, ns.

LS-tan, fn xln, uniform, dense, hard, few pcs chert-gry, milky, nvp, ns. LS-drk brn, fn

Mudco: 4351'  
 wt: 9.3  
 vis: 51  
 yp: 21  
 pH: 10.5  
 flt: 7.2  
 chr: 3900  
 lcm: 2

Mudco: 4546'  
 wt: 9.3  
 vis: 54  
 yp: 19  
 pH: 10.5  
 flt: 9.6  
 chr: 4400  
 lcm: 2

**DST#3**  
 Lower Ft. Scott  
 Vertigris  
 Krebs  
 4466'-4546'  
 30-45-60-90  
 Rec:  
 418' Total Fluid  
 1290' GIP  
 166' CO  
 grav:41 deg  
 126' GMCO  
 128' SGMCO  
 IFP: 81-134#  
 FFP: 141-212#  
 ISIP: 1224#  
 FSIP: 1210#

**DST#4**  
 Johnson  
 4544'-4592'  
 30-45-60-90  
 Rec:  
 318' Total Fluid  
 3' CO  
 128' OCWM  
 126' OSM  
 63' MCW sso  
 chlor: 62k ppm  
 IFP: 60-143#  
 FFP: 130-191#  
 ISIP: 1015#  
 FSIP: 987#

Mudco: 4592'

