

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: #7-31 Phelps
Location: 1035'FSL, 935'FWL, 31-13s-31w, Gove County, Kansas
License Number: API: 15-063-21871 Region: Maurice NE
Spud Date: 10-12-2010 Drilling Completed: 10-19-2010
Surface Coordinates: Lat: 38.876253
Long: -100.812873
Bottom Hole Coordinates: Vertical hole
Ground Elevation (ft): 2948' K.B. Elevation (ft): 2953'
Logged Interval (ft): Surface To: 4777 Total Depth (ft): 4779'
Formation: Mississippian (Spergen) 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 Pkwy Bldg #600
Wichita, Kansas 67206

COMMENTS

Contractor: Murfin Drilling Company Rig #24
Surface Casing: 8 5/8" set at 211' w/165sx
Mud by: MudCo - Engineer - Reid Atkins
DST's by: Trilobite Testing Inc.
Logs by: Weatherford (DIL, CN-CD, ML)
LTD = 4777ft.

DST and Log data did not support further testing of this well and it was therefore plugged and abandoned on October 19, 2010.

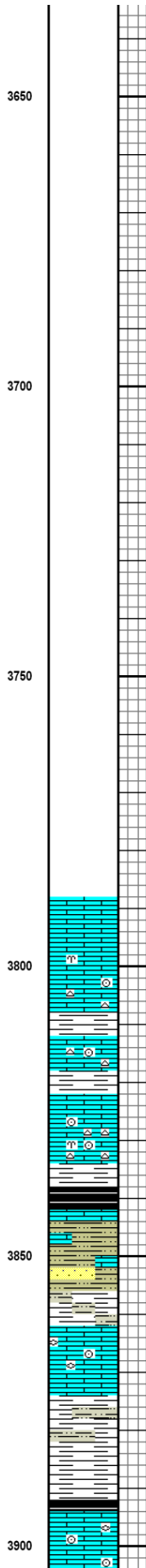
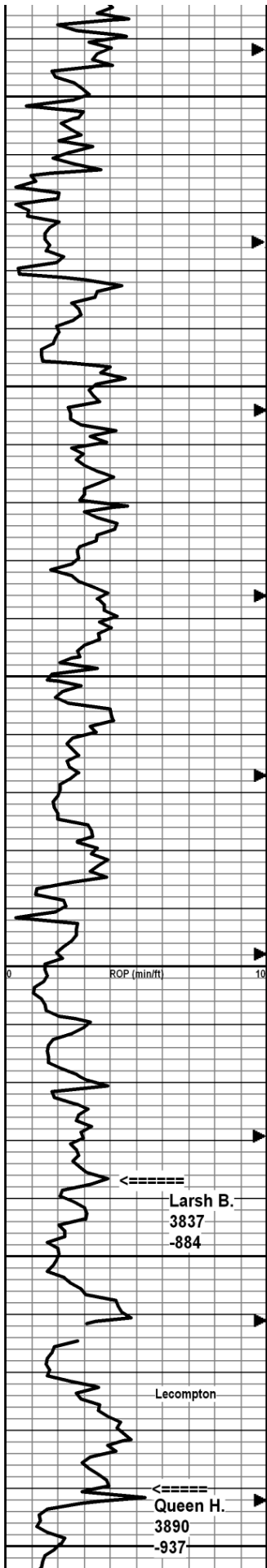
FORMATION TOPS AND STRUCTURAL POSITION

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Stone Corral	2436'	+517	2436'	+517
B/Stone Corral	2459'	+494	2457'	+496
Heebner Shale	3952'	-999	3950'	-997
Lansing	3998'	-1045	3996'	-1043
Muncie Creek Shale	4159'	-1206	4156'	-1203
Stark Shale	4250'	-1297	4248'	-1295
Marmaton	4355'	-1402	4355'	-1402
Upper Fort Scott	4460'	-1507	4459'	-1506
Little Osage Shale	4491'	-1538	4489'	-1536
Johnson Zone	4591'	-1638	4591'	-1638
Morrow	4416'	-1663	4617'	-1664
Mississippian	4735'	-1782	4734'	-1781
RTD	4779'	-1826		
LTD			4777'	-1824

Rate of Penetration
ROP (min/ft)

IWS

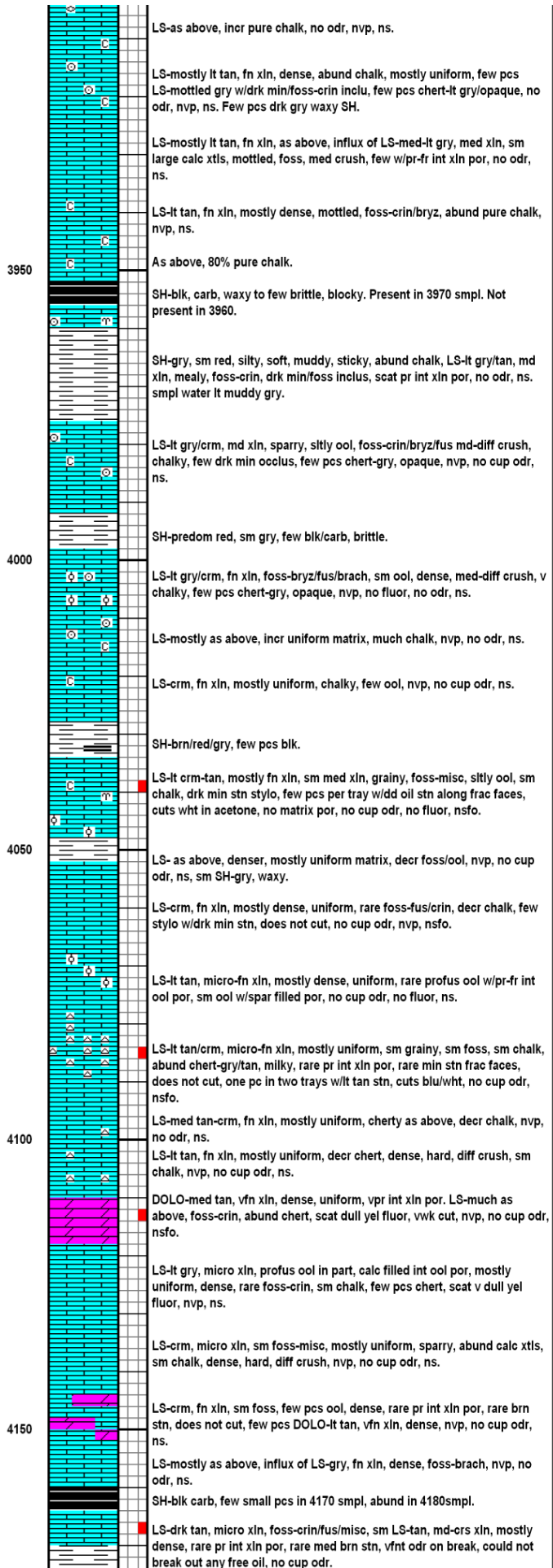
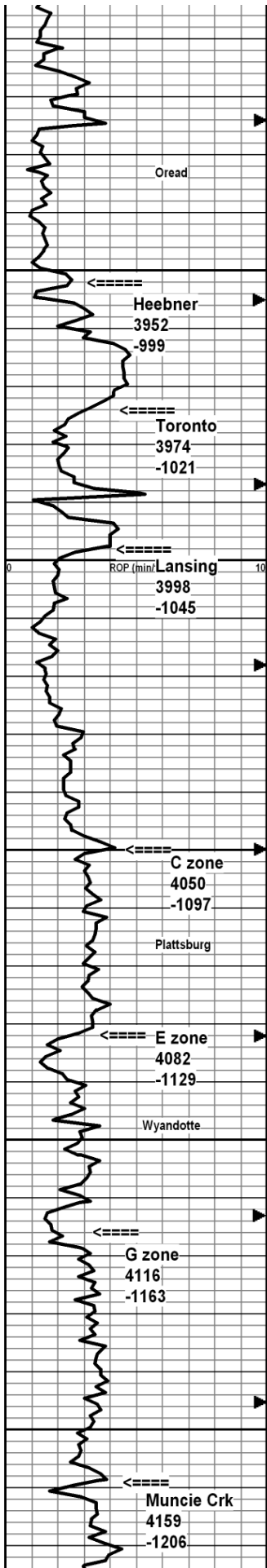
Depth	Lithology	Geological Descriptions	Remarks
<p>ROP (min/ft)</p>		<p>Morning Report Depth/Activity</p> <p>Spud at 6:00 pm on 7-10-2010</p>	
<p>ROP (min/ft)</p>		<p>10/13/2010 Drilling</p> <p>Drilling @'</p> <p>10/15/2010 Drilling @ 3878'</p> <p>10/16/2010 Drilling @ 4235'</p> <p>10/17/2010 Drilling @ 4491'</p> <p>DST #2 @ 4693'</p> <p>to log @ 4779'</p>	<p>10/14/2010</p> <p>10/18/2010</p> <p>10/19/2010 Prepare</p>
<p>Stone Corral 2436' (+517)</p>			
<p>Base Stone Corral 2459' (+494)</p>			
<p>ROP (min/ft)</p> <p>▶ = Connection</p>			
<p>ROP (min/ft)</p>		<p>Bit trip at 3562. SureShot - 1deg. Strap 1.62 Short to board</p>	
<p>ROP (min/ft)</p>			

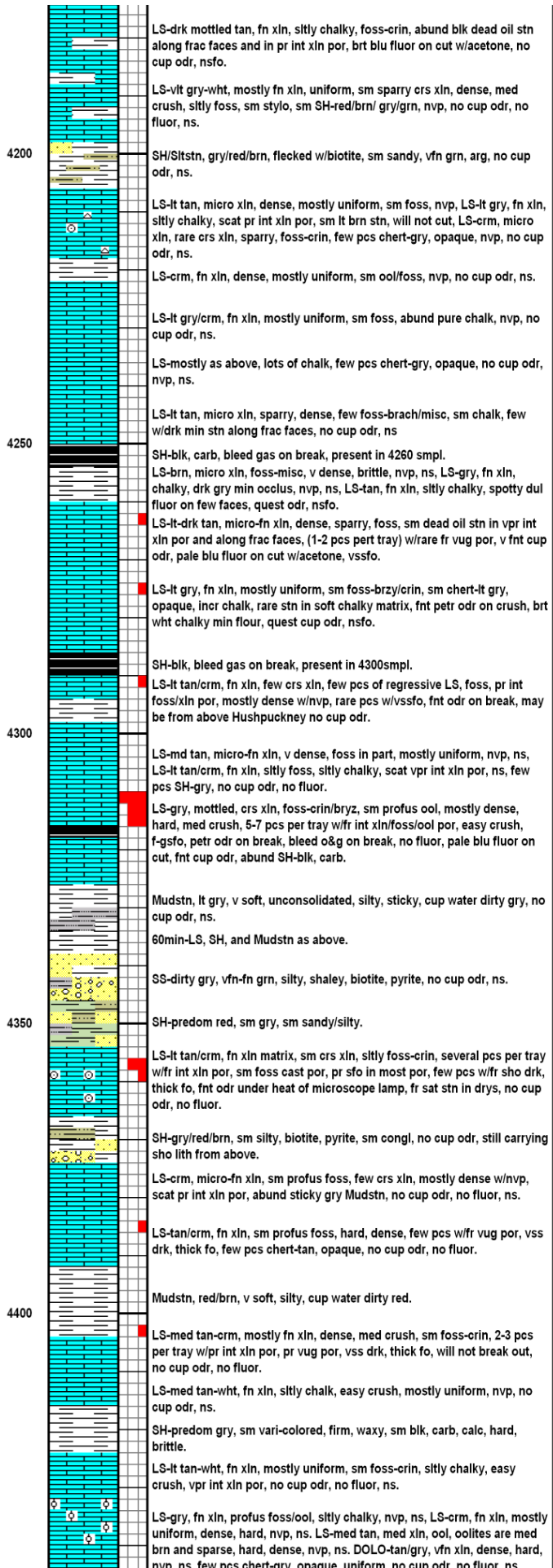
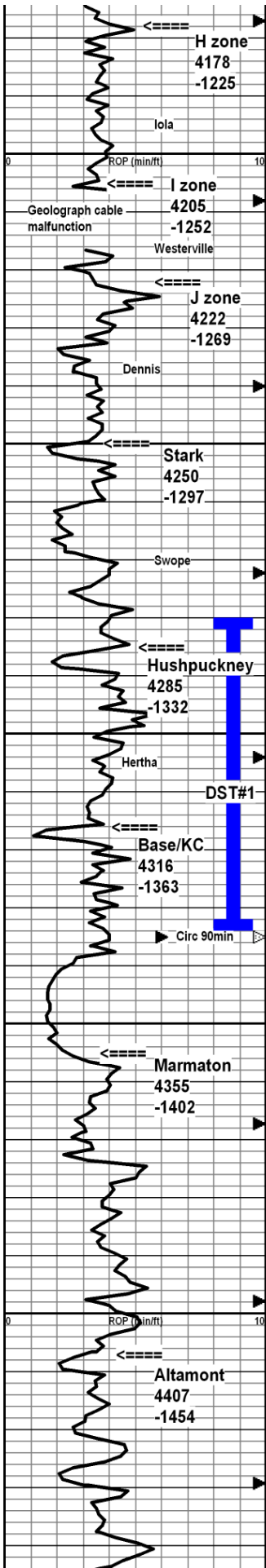


Samples start at 3800'

- LS-lt tan, md xln, mealy, silty chalky matrix, sm pure chalk, med crush, sparry, sm lrg calc xtls, v foss-misc/bryz/crin, rare clr chert, pr int xln por, no odr, ns.
- LS-mostly as above, mealy, chalky, incr pure chalk, incr chert-gry, opaque, SH-med gry, mostly soft, blocky, sm med hard, fissile, sm tiny flecks of biotite.
- LS-lt tan, fn xln, grainy, uniform, med-diff crush, nvp, sm LS-gry, transgr w/foss-crin, abund Chert-gry, opaque.
- LS-med tan, md xln, grainy, mealy, med crush, foss- misc/brach, abund chert as above, nvp, ns. few pcs SH-drk gry, uniform.
- SH-blk, carb, present in 3850 smpl.
- SH-lt gry, v sandy/silty, vfn grn, arg, rounded pcs in smpl, soft/friable, few pcs fairly clean, nvp, no odr, ns. Several LS's as above, incr in LS-gry, vfn xln, dense, uniform, nvp.
- Mudstn-lt brn, silty, smple cup water muddy gry/brn.
- LS-md-lt gry, fn-med xln, abund foss-crin/fus, sm sparry, abund pure chalk, nvp, ns.
- Mudstn-med red/brn, silty, v soft, cup water muddy brn.
- Mudstn as above.
- LS-lt tan/gry, fn-med xln, grainy, sm spar, v foss-crin/fus, rare ool, chalky, sm LS-med gry, dense uniform, few pcs SH-vdrk gry/blk, carb.

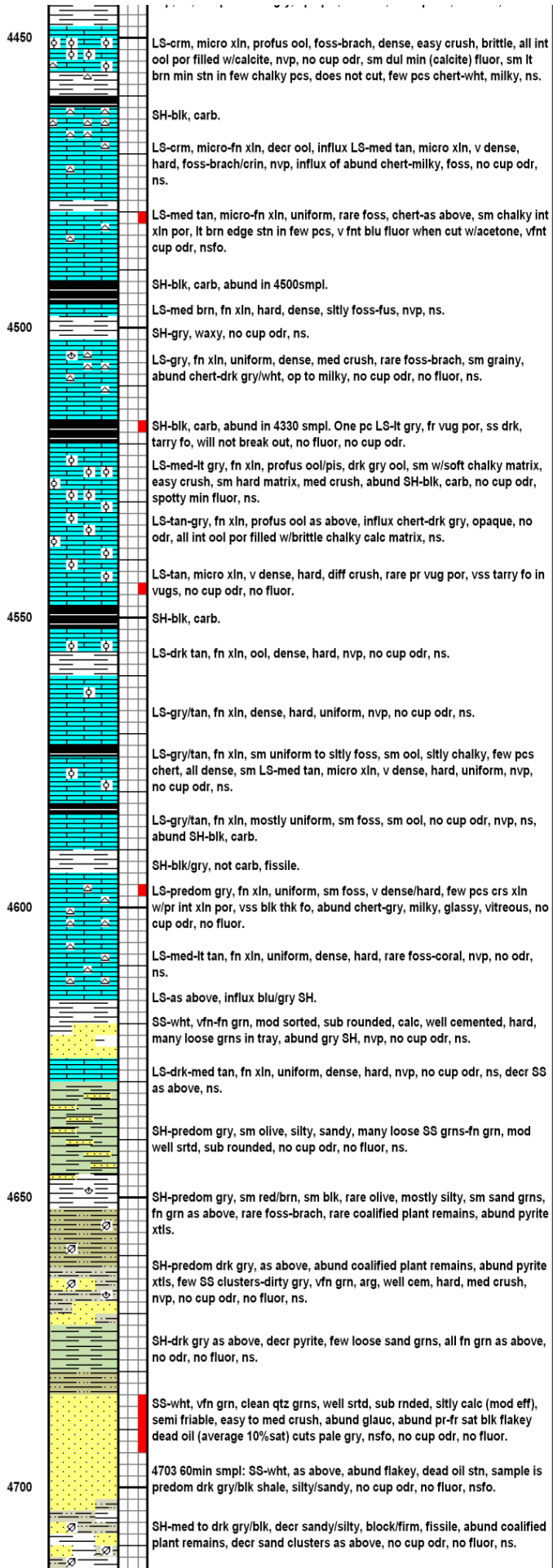
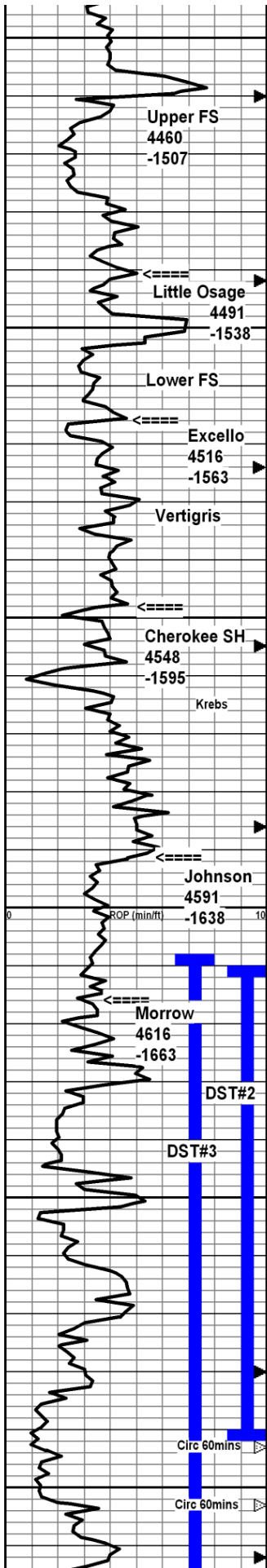
Mudco: 3877
 Wt: 8.8
 Vis: 62
 Yield: 20
 pH: 10
 Filt: 8.8
 Chlor: 2000
 LCM: 2





DST#1 - Hertha
4281' - 4335'
30-30-5-OUT
Rec: 5'Mud
IFP: 24-32#
FFP: 45-40#
ISIP: 1116#
FSIP: N/A
BHT: 112deg

Mudco: 4335'
Wt: 9.2
Vis: 59
Yield: 21
pH: 9.5
Filt: 7.6
Chlor: 4000
LCM: 1



Rig check @ 4491 add
-25min to 4500 lag

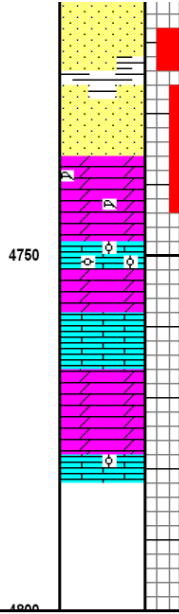
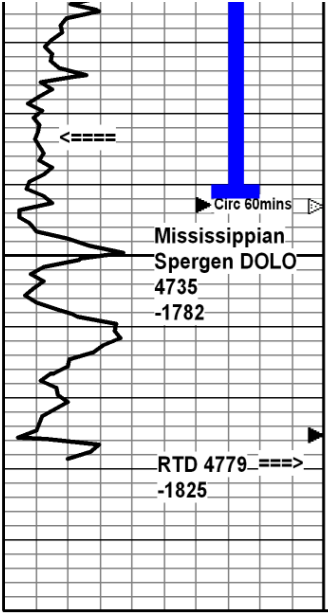
Mudco: 4504'
Wt: 9.2
Vis: 66
Yield: 23
pH: 10
Filt: 8.8
Chlor: 4,400
LCM: 1

DST#2- Morrow
4610' - 4693'
30-30-5-OUT
Rec: 15'Mud
IFP: 39-63#
FFP: N/A
ISIP: 973#
FSIP: N/A
BHT: 114deg.
Tool plugged during 2nd
open period.

Mudco: 4693'
Wt: 9.3
Vis: 50
Yield: 17
pH: 10
Filt: 8.0
Chlor: 4000
LCM: 1

4680' Repair mud pump.
Down 51 mins.

DST#3-Morrow
Miss
4608'-4743'
30-45-60-90
Rec:
120' SOCWCM
300' WCM, Scum O
105' SWCM



SS-clr, fn grn, sub ang, mod well srtd, sltly calc (v wk eff), friable, glauc, abund pyrite, abund loose grns in tray, fnt cup odr, abund dead oil as above, gsfo in 3-5 clusters per tray, fr odr on crush, streaming cut in acetone, spotty to fr (50%) stn in drys.

4743 40min sample, DOLO-med tan, fn xln, foss-coral/crin, glauc, vuggy/oc, gd-vg vug por, pale blu streaming cut in acetone, rare stn in drys, fnt cup odr, ssfo.

4743 60min sample, as above.

DOLO- as above

4750 LS-mottled gry, med-crs xln, ool/pis, sltly chalky matrix, easy crush, fr int xln por, no cup odr, no fluor, ns.

LS and DOLO as above, smple predom SH-blk, abund pyrite, no odr, ns.

Mostly no change, influx of small amout of LS-wht, fn xln, ool, chert-wht, nvp, ns, still carrying abund DOLO-med tan as described above, gd vug por, ns, still carrying abund mottled gry LS as above, fr int xln, por, no odr, no fluor, ns.

IFP: 81-266#
 FFP: 334-305#
 ISIP: 1201#
 FSIP: 1205#
 BHT: 120deg
 Chlor: 21,000ppm
 Tool plugged during 2nd open period.

Mudco: 4779'
 Wt: 8.9
 Vis: 73
 Yield: 30
 pH: 10
 Filt: 8.0
 Chlor: 4,200
 LCM: 8#

Lost Circ @ 4779'