

# GRAND MESA

# OPERATING COMPANY

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

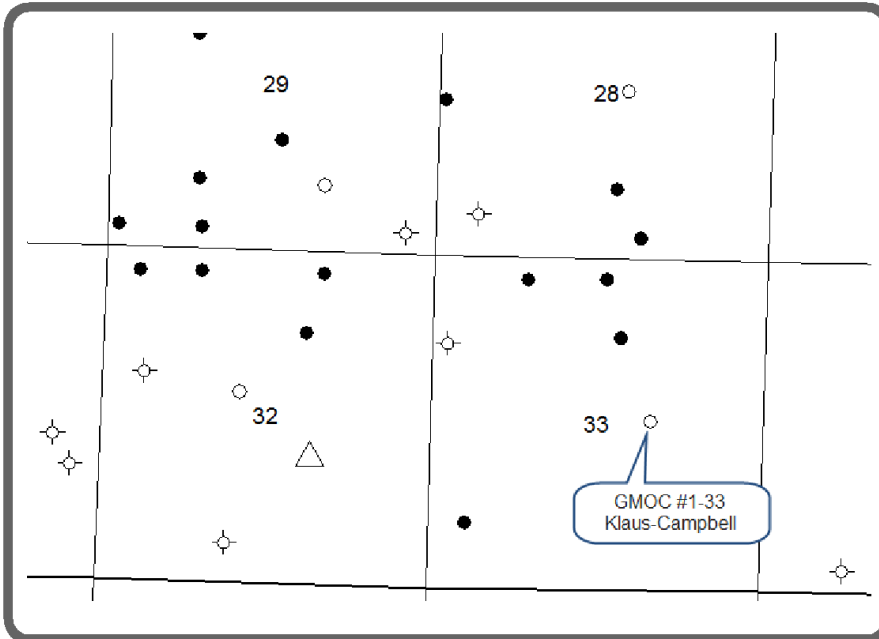
Scale 1:240 (5"=100') Imperial  
Measured Depth Log

Well Name: #1-33 Klaus-Campbell  
Location: 2581'FNL 1797'FEL 33-13s-31w, Gove County, Kansas  
License Number: API: 15-063-21938 Region: Antelope Ridge  
Spud Date: 8/16/2011 Drilling Completed: 8/23/2011  
Surface Coordinates: LAT: 38.880957  
LONG: -100.766931  
Bottom Hole Vertical hole  
Coordinates:  
Ground Elevation (ft): 2893 K.B. Elevation (ft): 2898  
Logged Interval (ft): 3600' To: RTD Total Depth (ft): 4700  
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 and John Goldsmith  
Company: Grand Mesa Operating Company  
Address: 1700 N. Waterfront Parkway, Bldg 600  
Wichita, Kansas 67206  
316-256-3000



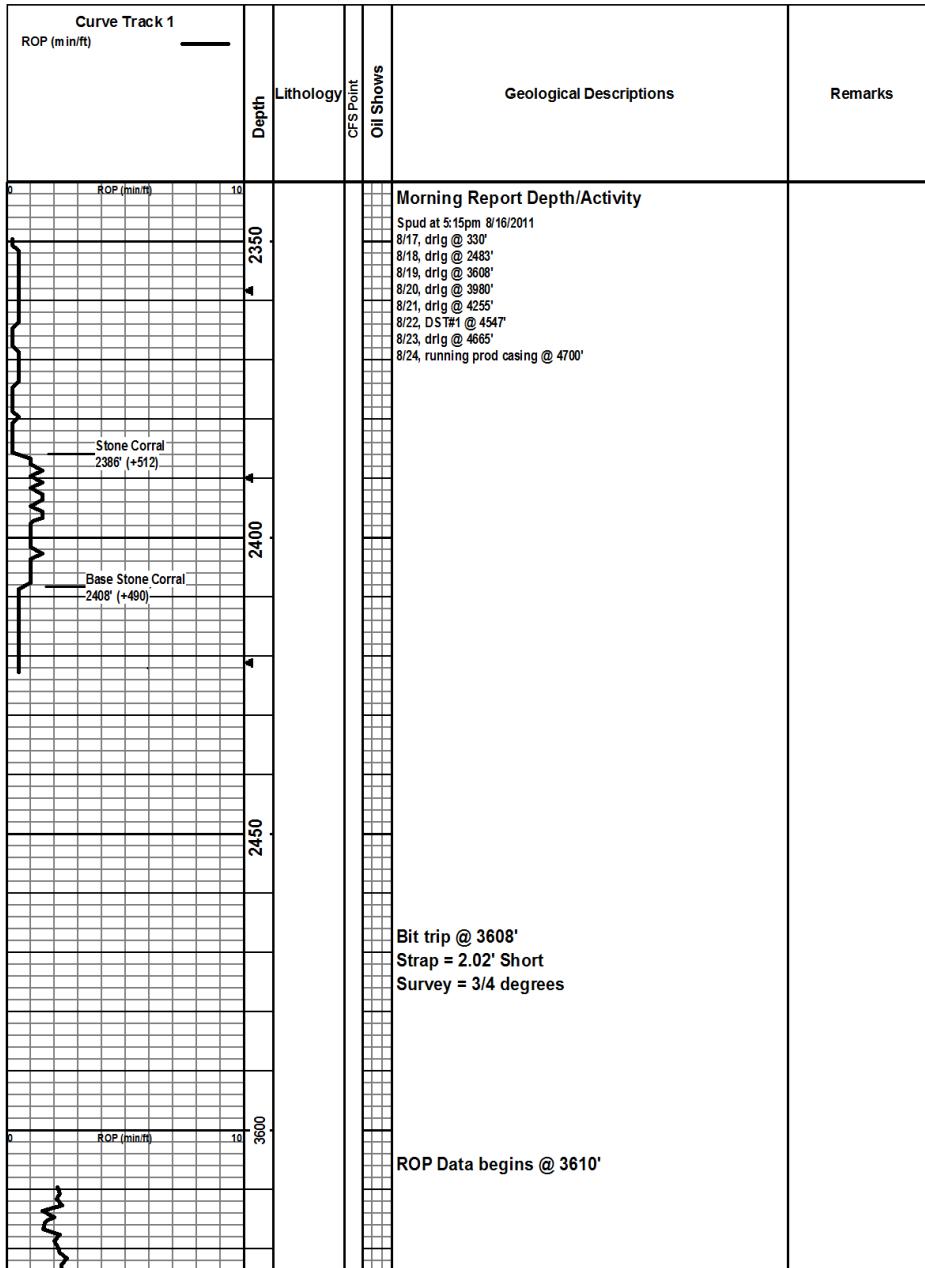
## COMMENTS

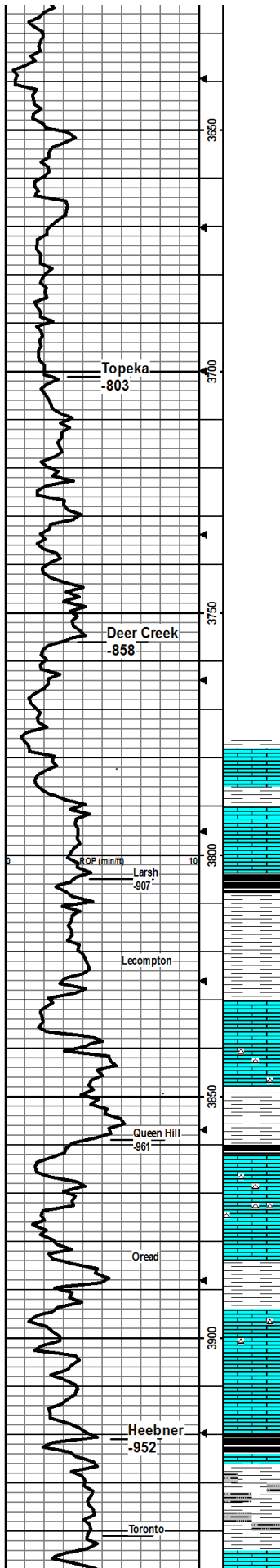
Contractor: Murfin Drilling Company Rig #24  
Pusher: Tony Martin  
Surface Casing: 8 5/8 set at 220'  
Production Casing: 5 1/2" set at 4700' to further evaluate the Johnson zone.  
Mud by: MudCo  
DST's by: Superior Testing  
Logs by: Weatherford (DIL, CN-CD, ML)  
RTD=4700'  
LTD=4694'

## FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Stone Corral	2386'	+512	2381'	+517
B/Stone Corral	2408'	+490	2533'	+494

Heebner Shale	3921'	-1023	3915'	-1017
Lansing	3959'	-1061	3954'	-1056
Muncie Creek Shale	4115'	-1217	4109'	-1211
Stark Shale	4203'	-1305	4197'	-1299
Hushpuckney Shale	4240'	-1342	4233'	-1335
Marmaton	4312'	-1414	4309'	-1411
Upper Fort Scott	4408'	-1510	4406'	-1508
Little Osage Shale	4432'	-1534	4428'	-1530
Excello Shale	4459'	-1561	4454'	-1556
Johnson Zone	4534'	-1636	4528'	-1630
Morrow	4563'	-1665	4558'	-1660
Mississippian	4594'	-1696	4588'	-1690
RTD	4700'	-1802		
LTD			4735'	-1697





LS - lt gry/cream, fxdn, no por, abund sh - gry, no cup odr, ns.

LS - gry/md tan, fxdn, foss-crin, bryz, brach, msty dns w/ nvp, sm LS drk gry, foss-crin, 1 pc LS md gry, fxdn, sply por, intxn por, sply drk brn stn, cuts pl blue, nsfo.

LS - gry/md tan, fxdn, fw cal inclusns, msty dns w/ nvp, no cup odr, ns.

LS - gry/md tan, fxdn, foss-forams/var, dns w/ nvp, no cup odr, fw LS gry, sptd w/ drk foss, dns/hd w/ nvp, scat pr int xln por, spotty drk stn, cuts pale blu, nsfo.

LS-crm/lt tan, mottled, crs xln, mealy/grainy, foss-bryz/fus, sm ool/pis, dense, hard, nvp, abund chert-gry, opaque foss, nvp, no cup odr, ns.

LS-mostly as above, dense/hard, diff crush, v foss-crin, SH-gry/grn, foss-brach, no cup odr, ns.

LS-crm/tan, fn-med xln, dense/hard, diff crush, v foss-crin/ fus/gas, scat pr int xln por, abund chert-gry, opaque, foss, no cup odr, no fluor, ns.

LS-4t gry/tn, vfn-fn xln, dense/hard, diff crush, decr foss-few fus/crin, nvp, chert as above, sm weathered, sm chalk, no cup odr, ns.

SH-gry/brn/sm blk-fiss, sm silty, LS-as above no cup odr, ns.

LS-med gry, med-crs xln, foss-fus/crin/foram, dense/hard, nvp, decr chert, sm chalk, no cup odr, ns.

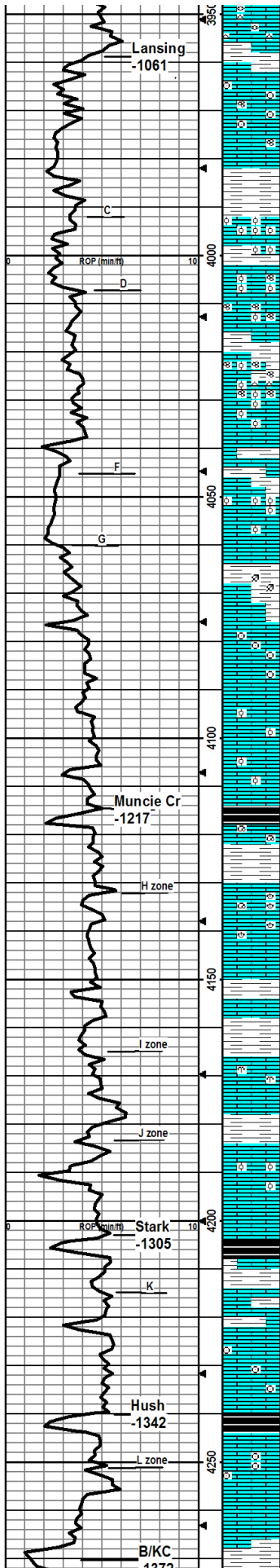
LS-tan/gry, med xln, foss, as above dense/hard, nvp, ns.

LS-gry, fn-med xln, decr foss, dense/hard, nvp, ns.

SH-blk, carb, few pcs in 3930smpl, flood in 3940smpl.

MUDS TNV SH-4t gry/lt tan, v soft, silty in part, sample cup water is dirty tan/gry.

LS-4t tan/crm, micro-fn xln, v foss-various, rare pr int foss por mostly



filled w/calc spar, sm ool, dense/hard, diff crush, scat drk brn min stn, does not cut, sm chert-gry/ tan, opaque, foss-fus/spic, scat m in fluor, nvp, no cup odr, ns.

LS-gry, mostly vfn-fn xln, dense/hard, sm crs xln, sparry, sm chalk, uniform -vfoss-foram/crin/spic, v rare pr int xln por, no cup odr, ns.

LS-gry/lt tan, mostly as above, few pcs LS-orm, fn xln, ool/ foss-various, sparry, decr chalk, nvp, no cup odr, ns.

LS-orm/lt tan, micro-fn xln, sm uniform, dense/hard, sm profus ool, dense, med crush, few pcs chalk, nvp, no cup odr, ns.

LS-med-lt tan, sm fn xln, sm med-crs xln, abund foss-bryz/ various, abund spar, dense, nvp, no cup odr, ns.

LS-orm/tan, fn xln, profus ool/foss, spar filled int ool por, sm chert-gry, opaque, foss, no cup odr, no fluor, ns.

60m in LS-as above, influx red mudstn, v soft, sticky.

LS - lt tan/crm, f/med xln, ool/foss-forams, dens/hrd, ool filled por, no cup odr, sm sm al specs of pyrite

LS-orm/lt tan, vfn xln, rare crs xln, v foss/ool, sparry, mostly dense, sm mealy/flakey, chalky, nvp, sm chert-gry, opaque, fresh, no cup odr, SH-gry/grn, sm silty, ns.

LS - crm/lt tan, vfn xln, foss/ool, dense/hrd, nvp, no cup odr,

LS - lt tan/crm, fn xln, foss sm ool, dense, nvp, sm chert-gry, opaque, no cup odr, SH-gry.

LS - lt tan/crm, fn xln, ool/foss, sm chalky, ool fill por, sm SH - gry/grn.

LS - crm/lt tan, fn xln, foss, sm ool, nvp, sm SH gry/grn, w/ pyrite intrn x, 2 pc chert, orgn, no cup odr.

Predom SH-gry/brn, silty, sm mica, few plant remains.

LS - Lt tan/crm, vfn xln, foss/ool, nvp, sm SH-gry/grn, silty, no cup odr, ns.

LS - crm/lt gray, vf xln, sm foss-crin, few pcs ool, nvp, no cup odr, ns.

LS - lt tan/crm, f/dn, fw foss sm ool, nvp, no cup odr, ns.

LS - crm/lt tan, f/dn, scat frac w/ drk brn min stain, ds not cut, sm ool, nvp, no cup odr, ns.

LS - lt gry/crm, f w/ sm med xln, sm ool, nvp, sm pyrite m in intrnxd, no cup odr, ns.

LS - lt gry/crm, f/dn, sm ool/fw foss, nvp, sm cherty-gry, opaque, no cup odr, fw frags of drk carb SH.

SH - drk gry/black, carb.

LS - lt gry/lt brn, f/dn, foss-gast, sm ool, dense/hard, no cup odr, ns.

LS - Lt/med tan, med/crse xln, foss-bryz/crin, mstly dense, stlly chalky, fw pcs vpr nxdn por, sply dead oil stain, cuts wk pale blue, no cup odr, nsfo.

LS-It tan, fn xln, foss-brach/crin/ool, dense/med crush, nvp, no cup odr, ns.

LS-It tan, vfn xln, dense/hard, mostly uniform, decr foss, few pcs chert, few frac faces w/drck stn, w/k cut, no cup odr, nsfo.

LS-tan, med-crs xln, mostly uniform, sm foss-various, sm nvp, abund SH-brn, silty, no cup odr, ns.

SH-predom brn, silty, sm gry, silty.

LS-orm/lt tan, vfn xln, foss-fus/crin/bryz, dense, brittle, nvp, no cup odr, ns.

LS-sm as above, plus LS-gry, fn xln, uniform, dense/hard, nvp, no cup odr, ns.

SH-gry/grn/brn, sm silty, hard, waxy, no cup odr, ns.

LS-orm, micro xln, foss/ool, dense, brittle, nvp, no cup odr, no fluor, ns.

LS-orm, micro-fn, mostly uniform, sm foss as above, dense/hard, no cup odr, ns.

SH-blk, carb.

LS-It brn, micro xln, hard, dense, brittle, foss-various, nvp, no cup odr, ns.

LS-as above, SH-gry/grn, silty.

LS-gry, fn-med xln, dense, hard, brittle, foss-crin, nvp, no cup odr, ns.

SH-blk, carb.

LS - lt tan/lt brn, f/med xln, dense/hard, foss, nvp, no cup odr, ns.

LS - gry/lt tan, f sm med xln, dense, nvp, no cup odr, ns.

SH - gry/grn, hard.

Mudco:  
3957  
Wt: 9.1  
Vis: 57  
pH: 10.0  
Flit: 8.8  
Chlor: 2200  
LCM: 2

Circ 60m in

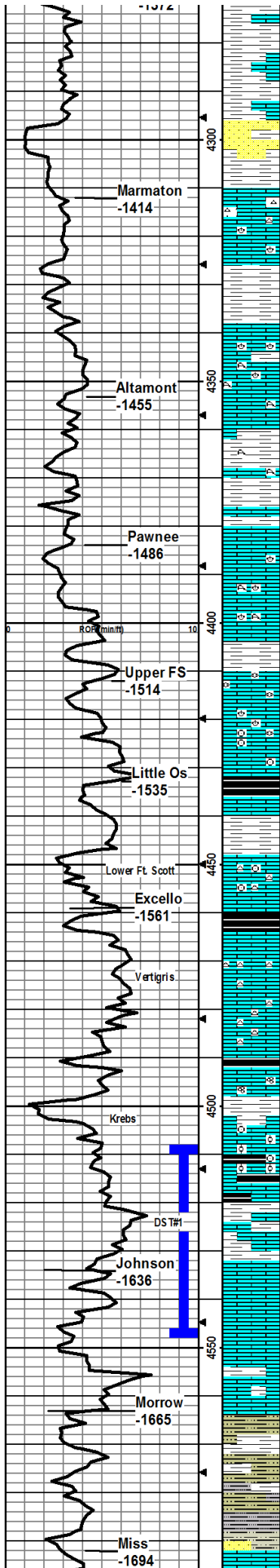
Circ 60m in

Circ 60m in

Circ 60m in

Circ 60m in

Mudco:  
4240  
Wt: 9.1  
Vis: 53  
pH: 9.5  
Flit: 8.2  
Chlor: 2500  
LCM: 2



SH - gry/grn, sm silty, no cup odr.

SH - gry/grn, sm silty, sm LS - tan/lt brn, f xln, dense flakey, nvp no cup odr, ns

SH - gry/grn, silty, sm LS - gry/lt tan, fxn, foss, dense/hard, nvp, no cup odr, ns.

SH - gry/grn, sandy, soft, chalky, sm LS - crm/lt tan, med xln, foss-brach, sm ool, tr int xln por, SS - lt brn, fn grn, sub rnded grns, tr por, no cup odr, ns.

LS - lt tan/crm, fmed xln, sm ool, nvp, sm pcs Chert - brght orng, no cup odr, ns.

LS - lt tan/crm, f xln, foss-crin/brach, flakey, nvp, fw pcs SH - reddish/brn, silty, no cup odr, ns.

LS - lt tan/lt brn, fxn, foss-brach, flakey, sm crm, nvp, no cup odr, ns.

LS - lt tan/crm, fmed xln, foss-brach, dsn/hrd, nvp, sm SH - rdsh/brn, silty, fresh, no cup odr, ns.

LS-med tan, med xln, uniform to v foss-coral/crin, hard/ dense brittle, few pcs w/vpr int xln por, drk patchy sh, dead oil? does not cut, abund SH-gry/brn, sm silty, no cup odr, nsfo.

LS-brn-lt gry, sm mottled, sm uniform, sm foss-coral/ various, hard/dense, rare vpr int xln por w/drck patchy dd oil stn, does not cut, abund SH-predom gry, no cup odr, nsfo.

SH-predom gry, silty, sm red/brn, silty, no cup odr, ns.

SH-gry/brn, silty, sm pure chalk-wht, v soft, sticky, nvp, no cup odr, ns.

pure chalk as above, soft, sticky.

LS-med tan, micro xln, profus ool/foss-brach/coral/bryz, hard, dense, chalky, nvp, no cup odr, ns.

LS-lt gry-med tan, micro xln, profus ool/pic/foss as above, flakey, chalky, easy crush, nvp, SH-predom gry, sm striated, silty, sm blk-carb, no cup odr, ns.

LS-med tan, micro xln, profus ool/foss-crin/brach/fus, dense, med crush, nvp, SH-drk gry/blk, sm carb, no cup odr, ns.

LS-med tan, fn xln, decr ool/foss, dense, hard, brittle, few pcs w/vpr int xln por, few spots free oil in rare pcs, chalky, abund chert-gry, op-transl, foss, nvp, no cup odr, ns.

SH-mostly drk gry, sm blk, carb, fissile

SH-med-lt gry, fissile.

LS-crm/lt gry, fn xln, mostly uniform, dense/brittle, foss-spi d'crin, nvp, no fluor, abund chert-gry, transl, foss-spic, no cup odr, ns.

SH-blk, carb, flood in 4470smpl, bleed gas on break, no cup odr.

LS-gry, fn xln, uniform, nvp, abund chert-gry, opaque, foss-spic, no cup odr, ns.

LS-med brn-lt tan, fn xln, some uniform, some v ool foss-various, dense, hard, nvp, abund sharp chert-gry, opaque, no cup odr, ns.

SH-blk, carb.

LS-tan, micro-fn xln, mostly uniform, dense, brittle, med crush, few foss-foram, nvp, no cup odr, ns.

SH-gry, silty.

LS-mostly as above, sm LS-tan, fn xln, ool/foss, dense, abund chert-gry, transl, foss-spic, sm DOLO-lt brn, fn xln, dense, nvp, SH-gry/silty sm blk carb, no cup odr, ns.

Mix of LS's and SH's as above, no cup odr, ns.

SH-gry, silty, sm blk carb.

LS-med tan, micro-fn xln, dense, brittle, mostly uniform to silty foss, v rare pr int xln por, 1pc/tray w/wssfo, no cup odr.

LS-mostly as above, dense, few pcs/tray w/pr-fr int xln por, ssfo, frnt odr on break, frnt gold fluor, no cup odr.

LS-med tan, fn xln, dense, uniform, rare foss, few pcs w/fr int foss por, nsfo, few pcs LS-med tan, med xln, fr ppl/wug por, ssfo, sm drk dd oil stn, abund pure wht chalk, soft, abund SH-gry, no cup odr.

SH and Mudstone, yell/gry, firm to v soft/sticky, silty, abund loose sand grns-clr qtz, vfn grn, sub-rnd, well srted, no clusters, no cup odr, no fluor, cup water dirty yellow/brown, ns.

SH and Mudstone as above, loose ss grns as above, no cup odr, ns.

SH-lt tan, vsoft, sticky, abund sand grns as above, no cup odr, sm SS clusters-lt blu/gry, vfn grn, well cen, well srted, ns.

Circ 30m in

DST#1  
4508'-4547'  
Johnson  
30-45-30-45  
180' GIP  
200' TF  
20' CO  
180' W&MCO  
60% Oil  
10% Wtr  
30% Mud  
Chlor: 30k  
IFP: 59-110#  
FFP: 120-137#  
SIP: 1213-116#

Circ 60m in  
Circ 60m in

