

GRAND MESA OPERATING COMPANY

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

1700 N. WATERFRONT PARKWAY
BLDG. 600
WICHITA, KANSAS 67208-5514

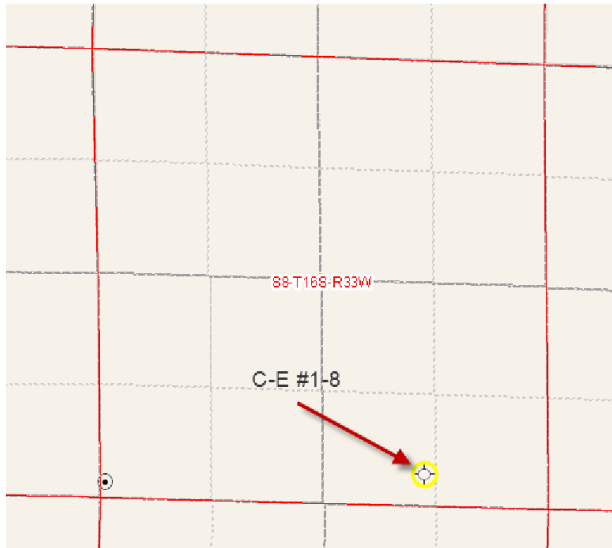
Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name: C-E #1-8
 Location: 352' FSL, 1414' FEL, 08-16s-33w, Scott County, Kansas
 License Number: API: 15-171-20852 Region: Scott County
 Spud Date: 11/07/2011 Drilling Completed: 11/19/2011
 Surface Coordinates: Lat: 38.6716612
 Long: -100.9856725
 Bottom Hole Coordinates: Vertical hole
 Ground Elevation (ft): 3071' K.B. Elevation (ft): 3082'
 Logged Interval (ft): 3600' To: RTD Total Depth (ft): 4860'
 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: Kent R. Matson
 Company: Matson Geological Services, LLC
 Address: 33300 W. 15th Street S.
 Garden Plain, Kansas 67050
 316-644-1975



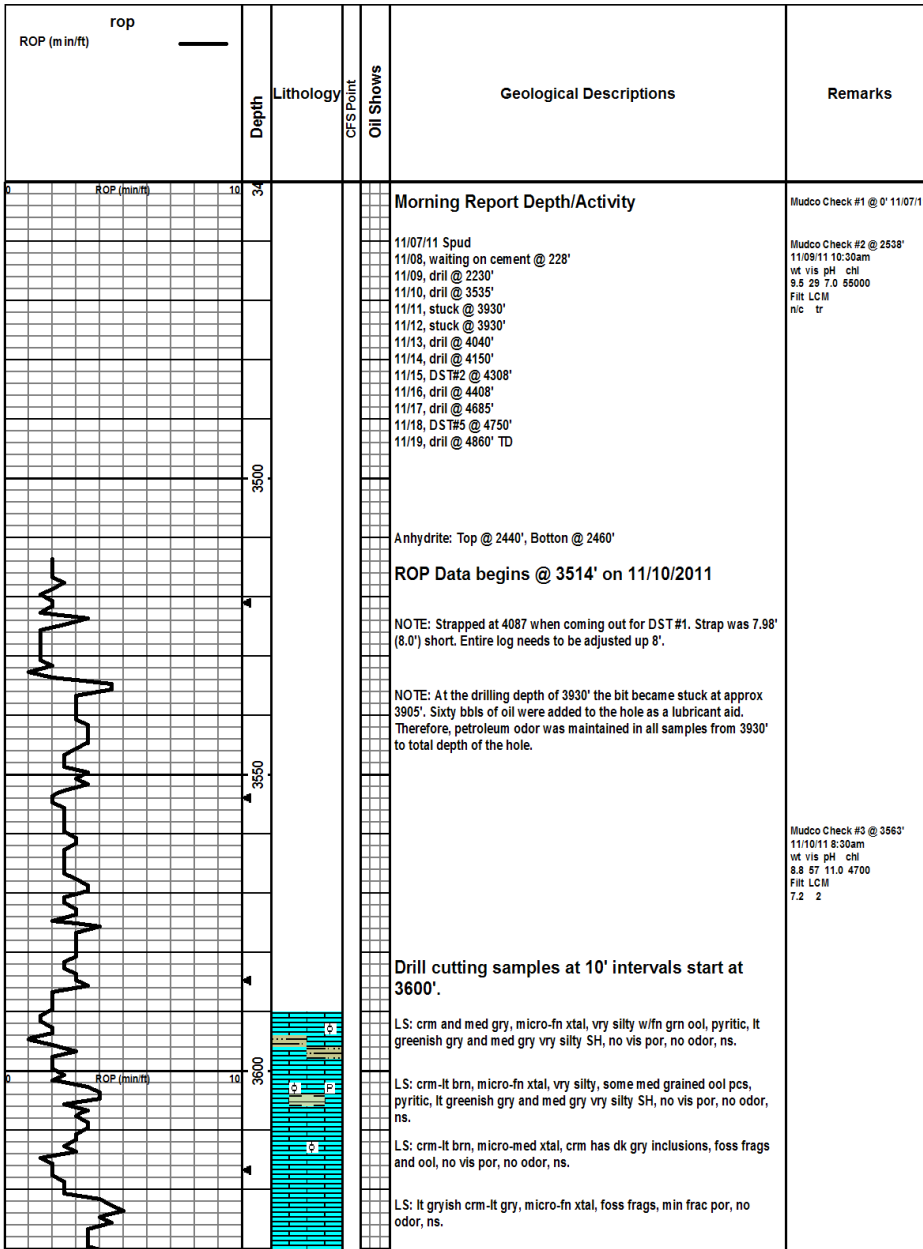
COMMENTS

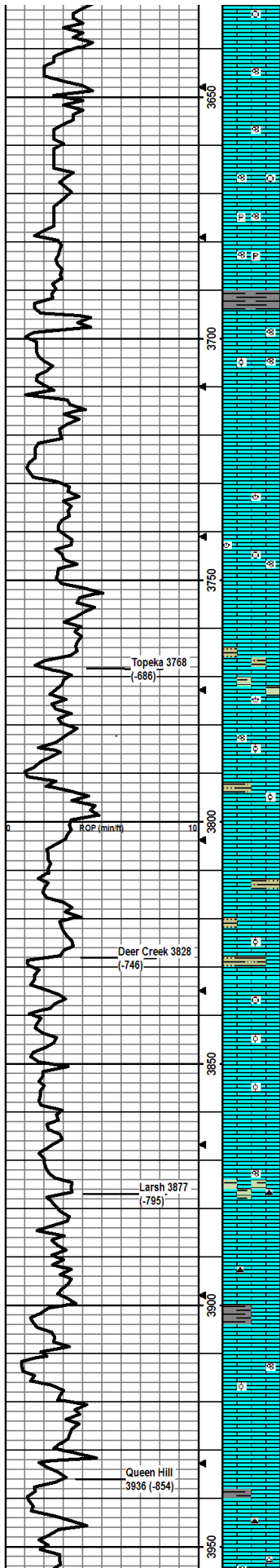
Contractor: Murfin Drilling Company Rig #22
 Pusher: Kelly Wilson
 Surface Casing: 8 5/8" set at 227' (KB) w/165sx
 Production Casing: Production casing was not installed and the hole was plugged and abandoned based on field observations of drill cuttings and DST results.
 Mud by: MudCo
 DST's by: Diamond Testing
 Logs by: Weatherford (DIL, CN-CD, ML, Sonic)
 RTD= 4860'
 LTD= 4853'

FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Queen Hill	3936'	-854	3928'	-846

Heebner Shale	3999'	-917	3998'	-916
Toronto	4029'	-942	4016'	-934
Lansing	4039'	-957	4032'	-950
Muncie Creek Shale	4221'	-1139	4214'	-1132
Stark Shale	4306'	-1224	4299'	-1217
Hushpuckney Shale	4349'	-1267	4339'	-1257
Marmaton	4418'	-1336	4410'	-1328
Upper Fort Scott	4528'	-1446	4520'	-1438
Little Osage Shale	4552'	-1470	4544'	-1462
Excello Shale	4569'	-1487	4561'	-1479
Johnson Zone	4644'	-1562	4636'	-1554
Morrow	4701'	-1619	4693'	-1611
Mississippian	4764'	-1682	4757'	-1675
RTD	4860'	-1778		
LTD			4853'	-1771





LS: crm-lt brn, micro-fn xtal, foss frags/crin, min frac por, no odor, ns.

LS: crm/lt gry/lt brn, micro-med xtal, foss frags/fusin, no vis por, no odor, ns.

LS: crm-lt gry, some wht chalky pcs w/dk gry inclusions, micro-fn xtal, foss frags/fusin, no vis por, no odor, ns.

LS: crm/lt gry/med-dk brn, micro-med xtal, some pyritic pcs, foss frags/fusin/crin, min frac por, no odor, ns.

LS: crm-lt gry, micro-fn xtal, some pyritic pcs, foss frags/fusin, min frac por, no odor, ns.

Same as above w/some dk gry LS pcs.

SH: med greenish gry-dk gry, vry silty, soft-hard and brittle.

LS: crm-lt brn, micro-fn xtal, foss frags/fusin, no vis por, no odor, ns.

LS: crm-lt gryish brn, micro-fn xtal, foss frags/min fusin, vry silty/ool, some wht chalky pcs, min in-xtal por, no odor, ns.

LS: crm/lt gry/lt brn, micro-fn xtal, foss frags, no vis por, no odor, ns.

LS: crm/lt gry brn/dk brn, micro-med xtal, some vry silty pcs, foss frags, no vis por, no odor, ns.

LS: med-dk gry, micro-fn xtal, min foss frags/brac, no vis por, no odor, ns.

LS: crm/lt-dk gry, micro-med xtal, foss frags/brac/fusin/crin, no vis por, no odor, ns.

LS: crm-lt brn/lt-dk gry, micro-fn xtal, some vry silty pcs, foss frags, no vis por, no odor, ns.

LS same as above w/med-dk gry SH, silty, brittle.

LS: crm-lt brn/med gry, micro-fn xtal, some med-dk gry soft SH, min foss frags/brac, no vis por, no odor, ns.

LS: crm-lt gry brn/lt-dk gry, micro-fn xtal, foss frags/fusin, fn grnd ool/silt, min frac por, no odor, ns.

LS: crm-lt brn/med-dk gry, micro-med xtal, some med gry silty SH, foss frags, fn grnd ool/silty, min frac por, no odor, ns.

LS: lt-dk gry, micro-med xtal, min foss frags, vry silty, no vis por, no odor, ns.

LS: crm/lt gry, micro-fn xtal, vry silty, greenish gry-med gry and red brn soft SH, min in-xtal por, no odor, ns.

LS: med brn, micro-med xtal, foss frags, vry ool/silty, increase in SH content as above, min in-xtal por, no odor, ns.

LS: crm-lt brn/med gry, micro-med xtal, foss frags/crin, vry silty/ool, min in-xtal por, no odor, ns.

LS: crm/lt gry, micro-med xtal, foss frags/min ool, vry silty, min in-xtal por, no odor, ns.

LS: lt brn, micro-fn xtal, vry silty/ool, no vis por, no odor, ns.

LS: lt gry/lt brn, micro-fn xtal, min foss frags, min ppt por, no odor, ns.

LS: lt brn, micro-med xtal, foss frags/fusin, min dk gry-blk chert, abund lt-dk gry/red brn SH, no vis por, no odor, ns.

LS: crm, micro-fn xtal, min foss frags, some 2ndary xtalization, min frac por, no odor, ns.

LS: crm/lt gry, micro-fn xtal, silty, min blk chert, min frac por, no odor, ns.

LS: crm-lt brn/ish gry, micro-fn xtal, min foss frags, vry silty, red brn/med to dk gry SH, min frac por, no odor, ns.

LS: crm-lt brn, micro-med xtal, foss frags/fusin/ool, silty, min in-xtal por, no odor, ns.

LS: crm/med-dk gry, micro-fn xtal, min foss frags, vry silty, min in-xtal por, silt odor poss from oil added at stuck point, ns.

LS: crm-lt brn, micro-med xtal, foss frags, vry silty, med-dk gry firm fissile SH, min in-xtal por, silt odor poss from oil added at stuck point, ns.

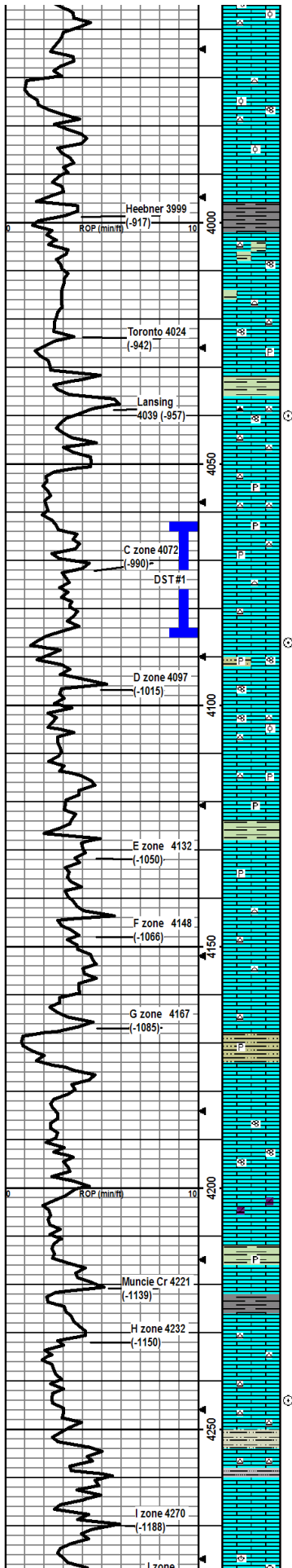
LS: crm/lt-med brn/dk gry, micro-fn xtal, min dk gry chert, foss frags, min frac por, silt odor poss from oil added at stuck poin, ns.

LS: crm, micro-med xtal, wht-lt gry chert, foss frags/fusin/silty-ool,

Mudco Check #4 @ 3830'
 11/11/11 06:50am
 wt vis pH chl
 9.0 56 11.0 4000
 Filr LCM
 6.4 2

Mudco Check #5 @ 3830'
 11/12/11 8:00am
 wt vis pH chl
 8.9 64 10 4200
 Filr LCM
 7.2 2

At TD of 3830', bit stuck at approx 3905' from approx 03:00am Nov 11 thru 12:30am Nov 12. Added 60 bbls of oil as lubricant aid. Used Peak Wireline to log hole for free point. Stuck point was at bit. Used Weatherford to supply jars; process worked for freeing bit.



mostly dense w/some pcs w/good in-xtal por, sum has odor from added oil at stuck point, ns.

Same as above w/some wht chalky pcs.

LS: crm/lt gry, micro-fn xtal, some wht chert, lt-med gry soft SH, some vry silty/ool pcs easily crushed, foss frags/fusin, min frac por, still has odor from added oil at stuck point, ns.

LS: crm-lt brn, micro-fn xtal, foss frags, some vry silty/ool pcs easily crushed, min frac por, odor from added oil at stuck point, ns.

LS same as above w/some dk brn inclusions.

SH: dk gry-blk, carb, brittle, fissile.

LS: crm-lt brn/lt gry, micro-fn xtal, some vry silty, some wht chert, some med gry pyritic soft SH, foss frags/fusin, min frac por, odor from added oil, ns.

LS: crm-lt brn, micro-med xtal, some lt gry chert, lt greenish gry-gry soft SH, foss frags, min frac por, odor from added oil, ns.

LS: wht/crm/lt brn, micro-fn xtal, wht chert, some pyrite, foss frags/min fusin, min frac por, odor from added oil, ns.

SH: red brn/med gry, carb, silty, soft.

LS: crm-med brn/lt gryish brn, micro-med xtal, wht and dk gry chert, foss frags/fusin, min frac-in-xtal por, odor from added oil, ns in 30" and 60" smpls.

LS: crm-lt brn, micro-med xtal, wht chert, red brn/med gry soft SH, foss frags, min frac por, odor from added oil, ns.

LS: crm/lt brn/lt gry, micro-fn xtal, wht/lt gry chert, min pyrite, foss frags, min frac-in-xtal por, odor from added oil, ns.

Same as above.

LS: crm-lt brn, micro-fn xtal, min wht chert, foss frags, residual odor from added oil, 4 larger pcs and 14-15 small pcs w/fo in stop smpl, 14-15 pcs in 30 min, 10-12 sml pcs in 60", good small vug por, crushes easily, gd strming yel flor, gsfo.

LS: crm-lt brn, micro-fn xtal, red brn/lt greenish gry-dk gry pyritic soft silty SH, foss frags/fusin, min frac por, odor from added oil, ns.

LS: crm-lt brn, micro-med xtal, wht chert, foss frags/fusin/ool, min in-xtal/frac por, 1 ool pcs w/fo, gd streaming yel cut, ssfo.

LS: crm-lt gryish brn, micro-fn xtal, min wht chert, min pyritic, foss frags, min frac por, odor from added oil, ns.

LS: crm, micro-fn xtal, stly pyritic, foss frags, min frac por, odor from added oil, ns.

SH: orange-red brn/med gry, some vry silty, soft.

LS: crm, micro-fn xtal, stly pyritic, min foss frags, min frac por, odor from added oil, ns.

LS: crm-lt brn, micro-fn xtal, min wht chert, min foss frags, mostly dense w/one pcs w/gd sm vug por w/fo, gd streaming yel cut, odor from added oil, ssfo.

LS: crm-lt brn, micro-med xtal, min wht/lt gry chert, foss frags, min frac por, odor from added oil, ns.

LS: crm-med brn/med gry, micro-med xtal, wht chert, foss frags/sev course grmd ool pel, min frac por, odor from added oil, ns.

SH: red/orange brn/lt-med gry, soft to hard, some vry silty/sandy, some pyrite.

LS: crm-med brn/lt gry, micro-fn xtal, foss frags, some vry silty pcs, min frac por, odor from added oil, ns.

LS: crm-lt brn, micro-med xtal, foss frags/fusin, silty, min frac-in-xtal por, odor from added oil, ns.

LS: crm-lt brn/gry brn, micro-med xtal, 1 pcs w/coarse grmd qtz, foss frags/fusin, min frac-in-xtal por, odor from added oil, ns.

LS: wht-crm, micro xtal, lt gry dolm, some silty pcs, min foss frags, min frac por, odor from added oil, ns.

SH: orange-red brn/greenish gry/gry, soft, silty pyritic, soft.

LS: wht-crm, micro-fn xtal, min foss frags, min frac por, ns.

SH: med-dk gry/blk, some vry silty, carb, firm fissile.

LS: crm-lt brn, micro-fn xtal, wht chert, min foss frags, min frac-in-xtal por, in 30" smpl 2 small pcs fn por w/fo, slit yel cut, odor from added oil, ssfo.

LS: crm/lt gry, micro-fn xtal, wht chert, min foss frags, min frac-in-xtal por, odor from added oil, ns.

SH: orange-red brn/greenish gry/gry, soft, some vry silty, soft.

LS: crm, micro-fn xtal, wht chert, some vry silty, min foss frags, min frac/xtal por, odor from added oil, ns.

SH: orange-red brn/gry, silty, soft.

LS: wht/crm/med gry, micro-fn xtal, dense, no vis por, odor from added oil, ns.

LS: crm-lt brn, micro-med xtal, foss frags/brac/crin, some vry silty, fn frac-in-xtal por, odor from added oil, ns.

CFS @ 4040'
30"/60"

Mudco Check #6 @ 4048'
11/13/11 08:00am
wt vis pH chl
8.9 58 9.5 7800
Filt LCM
10.4 2

DST1) 4062-4087
30/30/30/30
1st) Weak SB no build, no BB.
2nd) No blow built to 1/8" in 30 min, no BB.
IFP 4-12#
ISIP 1051# FFP
13-18# F SIP 1012#
HP 1913-1912#
Recvd: 3' slightly oil specked mud.

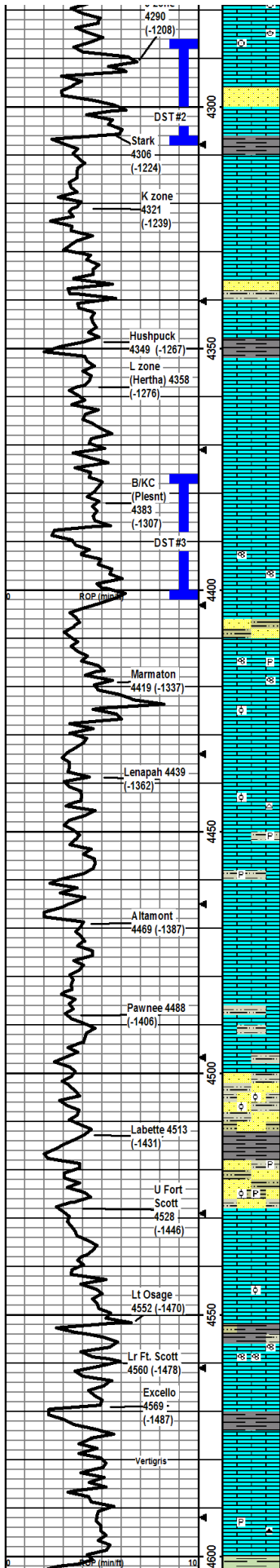
CFS @ 4087'
30"/60"

NOTE: Strapped at 4087' when coming out for DST #1. Strap was 7.98" (8.0") short. Entire log needs to be adjusted up 8'.

Mudco Check #7 @ 4167'
11/14/11 08:30am
wt vis pH chl
9.1 67 9.5 8400
Filt LCM
11.2 2

CFS @ 4244'
30"/60"

DST2) 4286-4308
30/30/30/30
1st) Weak SB built to 1/2" in 30 min, no BB.
2nd) Initial WB built to WSB in 30 min, no BB.
IFP 12-19#
ISIP 1104# FFP
19-18# F SIP 235#
HP 2083-2082#
Recvd: 3' mud.



Same as above.

LS: crm-lt brn, micro-fn xtal, silty, foss frags, frac/in-xtal por, odor from added oil, ns.
 SS: lt gry-greenish gry, well sorted, vf-f grnd, sr/wr, cal cement, friable/easily crushed, 1 pce in 30" and 4-5 pcs in 60" smpl w/br-dk brn fo, gd yel cut, gsfo.

LS: crm-lt brn/lt gry, micro xtal, no vis foss, no vis por, ns.
 SH: dk gry/blk, carb, firm, fissile.
 LS: wht/crm/lt brn, micro-fn xtal, min foss frags, some silty, dk pcs are dense lt pcs crush easily and have gd fn por, odor from added oil, ns.

LS: crm-med brn, micro-fn xtal, some vry silty/sndy pcs, no vis foss, no vis por, one spot of fo in tray, odor from added oil, ssfo.

LS: crm-lt brn, micro-fn xtal, min foss frags, no vis por, odor from added oil, ns.
 SH/SS mix: lt-dk gry vry silty soft SH, vry fn-fn grnd w/rnd crm-lt gry SS, glaucitic, friable, in-xtal por, ns.

LS: crm-lt brn, micro xtal, no vis foss, vry fn ppt por, 5 small pcs w/fo, no flor but yel stream when crushed, ssfo.
 SH: dk gry/blk, carb, firm, brittle.

LS: crm-lt brn, micro-fn xtal, min foss frags, vry fn ppt por, 2 pcs w/fo, no flor but yel stream when crushed, ssfo.

LS: crm-lt brn, micro-fn xtal, no vis foss, min frac por, odor from added oil, ns.

LS: crm-lt brn, micro-fn xtal, min foss frags, min frac por, ns.

LS: crm, micro-med xtal, vry silty, foss frags, some in-xtal/frac por, odor from added oil, ns.

LS: crm-lt brn, micro-med xtal, some vry silty, foss frags/fusin, some pcs w/gd in-xtal fn vug por, 3 pcs in 30" smpl and 5 pcs in 60" smpl w/fo, slow yel cut, sfo.

LS: crm/gry, micro-fn xtal, some vry silty, min foss frags, min frac por, odor from added oil, ns.
 SH/SS mix: SH is orange brn/red brn/gry, silty, soft; SS is mstly qtz, well sorted, sr-wr, friable.

LS: crm-brn, micro-med xtal, foss frags/fusin, some wht chalky pcs, stly pyritic, some dense some mod crushes, min frac por, odor from added oil, ns.

LS: crm-lt brn, micro-med xtal, foss frags, 1 pcs of course grnd ool, min frac por, odor from added oil, ns.

LS: crm-brn, micro-med xtal, min foss frags, min frac por, mostly dense some crushes easily, odor from added oil, ns.

LS: crm/lt brn/lt gry, micro-med xtal, min wht chert, min foss frags/ool, mostly dense w/min frac por, slit odor from added oil, ns.

LS: crm, micro-med xtal, foss frags, red brn/greenish gry/gry soft sily pyritic SH, no vis por, slit odor from added oil, ns.

LS: crm/lt gry, micro-fn xtal, min foss frags, min frac por, slit odor from added oil, ns.

LS: crm, micro-fn xtal, min foss frags, min frac por w/one pce w/fo in fn in-xtal por, slit odor from added oil, no flor, ssfo.

LS: crm, micro-med xtal, min foss frags, vry silty, red brn/gry sily soft-brittle SH, min frac por, slit odor from added oil, ns.

LS/SH same as above, ns.

SH/SS mix: SH is red brn/lt-med gry, soft to brittle, some vry silty; SS is wht/lt-med gry, qtz, easily crushed/friable, sev loose course grn ool, slit odor from added oil, ns.

SH: dk gry/blk, carb, some slit silty, firm, fissile.

SH/SS mix: SH is red brn/gry, slit pyritic, soft to firm, some vry silty; SS is wht/lt-med gry, qtz, firm to easily crushed/friable, sev loose course grn ool, ns.

LS: lt brn/gry, micro xtal, no vis foss, no vis por, slit odor from added oil, ns. (Note: one pcs of gry SS w/sfo, yel streaming cut when crushed, poss from J-zone ???)

LS: lt brn-brn, micro xtal, one pce w/course grnd ool, no vis por, slit odor from added oil, ns.

SH: med-dk gry/blk, some vry silty, soft-firm.

Note: one pcs of greenish gry SS w/sfo, yel streaming cut when crushed.???

LS: lt brn, med xtal, abund fusin foss, no vis por, slit odor, ns.

LS: crm/lt brn, micro xtal, no vis foss, no vis por, slit odor, ns.

No samples were retained in sample box for 4590 sample. Driller thought adding premix mud may have caused problem. Assume Excello shale.

No samples were retained in sample box for 4600 sample. Problems with retaining samples in collection box.

LS: crm, micro-fn xtal, min foss frags, slit pyritic, some dk gry chert, no vis por, no odor, ns. Note: sample tray was mostly filled with red brn/green gry/gry-dkgr SH, odor from added oil.

Sample are not ood and are a mixture of mostly SH with LS and

CFS @ 4285'
30"/60"

CFS @ 4308'
30"/60"

Mudco Check #8 @ 4328'
11/15/11 11:00am
wt vis pH chl
9.3 72 8.5 9600
Filt LCM
12 2

DST3) 4375-4402
15/15/15
1stj Weak SB died in 3.5 min, no BB.
2ndj No blow, no BB
FFP 9-10# FSP 10# FFP 10-10#
ISIP 11# FSP 10#
HP 2082-2081#
Recvd: 2' mud

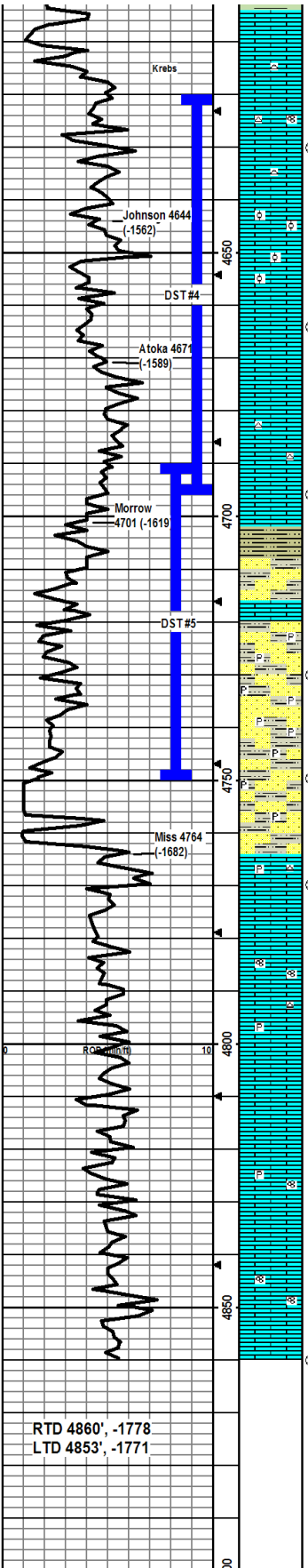
CFS @ 4379'
30"/60"

CFS @ 4402'
30"/60"

CFS @ 4460'
30"/60"

Mudco Check #9 @ 4468'
11/16/11 12:30pm
wt vis pH chl
9.3 51 10 8000
Filt LCM
9.6 2

DST4) 4620-4686



some SS. Driller on morning tower came on about 1 hour ago and just relieved the bit pressure some to poss aid with samples.

LS: crm-dk gryish brn, micro-med xtal, min wht chert, foss frags/fusln, no vis por, odor from added oil, ns.

LS: crm/gry/dk brn, micro-med xtal, wht chert, foss frags/fusln, min in-xtal por, odor from added oil, ns.

LS: crm-lt brn, micro-fn xtal, min wht chert, stly pyritic, foss frags, mostly dense w/3 pcs w/fn in-xtal por w/fo, slit odor, no flor but yel strm cut, ssfo.

LS: crm-lt gryish brn, micro-med xtal, min foss frags, sev course grnd loose ool and clusters, min in-xtal por, one pcs w/fn in-xtal por w/fo, odor, yel cut, ssfo.

LS: wht/crm/gryish brn, micro-fn xtal, min foss frags, course grnd ool and clusters, min in-xtal por, one wht small pce in 30" and 6 small pcs in 60" smpl w/fn in-xtal por w/fo, gd odor, yel cut, gsfo.

LS and oil shows same as above, 10 small pcs w/fo.

LS: crm-brn, micro-med xtal, foss frags, min frac por, slit odor, one pce w/fn in-xtal por w/fo, slit odor, yel cut, ssfo.

LS: crm-lt brn some dk gry mottling, micro-fn xtal, min lt brn chert, min foss frags, silty, min frac por, one pce w/fn in-xtal por w/fo, yel cut, slit odor, ssfo.

Same as above, one pce in 30 min w/oil, yel cut when crushed, none in 60" smpl.

LS: crm-lt brn, micro-fn xtal, foss frags, min frac por, odor from added oil, ns.

SH: greenish gry-gry, some vry silty, mostly soft to firm and fissile, mustard yel hard LS pcs.

SH/SS mix: SH is lt gry-gry/brn, vry silty, soft-firm. SS is lt gry-green gry, predom qtz, ws, wr, sm glac, friable, ns.

LS: crm, micro-fn xtal, min foss frags, silty, one pce with lattics structure throughout chip, min in-xtal por, ns.

SH/SS mix: SH is lt-dk gry w/some green/maroon mottling, soft-firm and fissile, slit pyritic, vry silty; SS is yel brn/lt-med gry, qtz, ws, wr, friable, in 30" smpl one yel brn pce w/fo, good yel cut, ssfo.

SH/SS mix: SH is lt greenish gry-dk gry/dk brn, vry silty, soft-firm and fissile, pyritic; SS is wht-gry, qtz, ws, wr, friable, ns.

Same as above w/more SH content.

SH/SS mix: SH is lt greenish gry/lt-dk gry/dk red brn, vry silty, slit pyritic, soft-firm and fissile, SS is greenish wht/gry/lt brn, qtz, ws, wr, some hard, some friable, ns.

LS: crm/lt brn-brn, micro-med xtal, vry silty/sandy, no vis por, ns.

SH/SS mix as above.

LS: brn-dk gryish brn, micro xtal, some wht/lt gry chert, stly pyritic, no vis por, hard, ns.

LS: crm-lt brn micro-fn xtal, no vis foss, ns vis por, ns.

LS: lt gryish brn, micro-fn xtal, foss frags/fusln, no vis por, ns.

LS: lt brn-gryish brn, micro xtal, min wht chert, stly pyritic, no vis foss, no vis por, ns.

LS: crm/lt brn, micro xtal, no vis foss, min frac/in-xtal por, ns.

LS: brn/gry brn, micro-fn xtal, some silty, no vis foss, silty is friable non-silty is vry hard, min frac por, ns.

LS: crm/lt brnsh gry, micro-med xtal, stly pyritic, foss frags/fusln, min frac/in-xtal por, ns.

LS: crm/brn, micro-med xtal, some silty, foss frags, no vis por, ns.

LS: crm/lt brn/dk gryish brn, micro-med xtal, some silty, some foss frags/fusln, min frac/in-xtal por, ns.

LS 14" 4620-4630
30/30/30/30
1st) 14" blow built to 1/2" in 30 min, no BB.
2nd) No blow, no BB
IFP 13-15#
ISIP 50# FFP 14-16#
F SIP 37#
HP 2260-2260#
Recvd: 3' mud

CFS @ 4630'
30"/60" in order to correct mud issue with bad samples. Driller added pre-mix to mud and relieved some bit pressure.

CFS @ 4664'
30"/60"

Mudco Check #10 @ 4695'
11/17/11 11:50am
wt vis pH chl
9.3 52 10 7200
Filt LCM
8.4 3

CFS @ 4696'
30"/60"

DST5) 4690-4750
45/45/60/90
1st) 14" blow built to 4.25" in 45 min, no BB.
2nd) WSB built to 4.25" in 60 min, no BB.
IFP 19-71# FFP
ISIP 1086# F SIP 1123#
22-128#
HP 2245-2245#
Recvd: 276' oil specked watery mud.

CFS @ 4730'
30"/60"

Mudco Check #11 @ 4750'
11/18/11 9:40am
wt vis pH chl
9.5 68 8.5 8000
Filt LCM
12.8 3

CFS @ 4750'
30"/60"

CFS @ 4770'
30"/60"

Mudco Check #12 @ 4860'
11/19/11 9:10am
wt vis pH chl
9.5 81 10.0 9500
Filt LCM
10.4 2

Cir 1.5 hrs @ 4860' to clean hole.

RTD 4860', -1778
LTD 4853', -1771