

Remarks

5 1/2" production casing set to further test the Toronto, Lansing / Kansas City and Pawnee formations.

Electric log measurements correlate about even to 2' deep compared to rotary measurements.

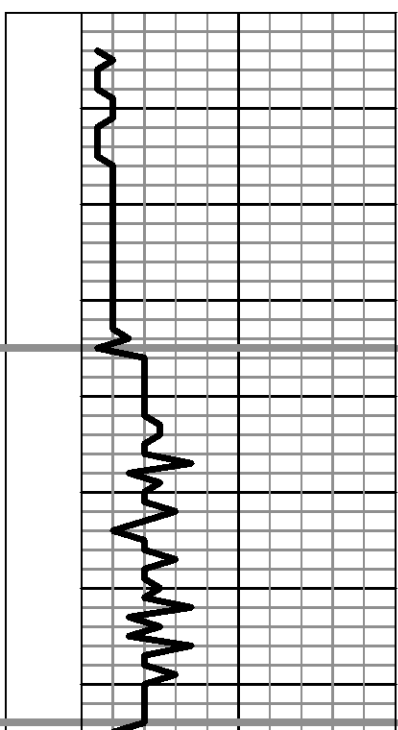
Samples deposited at the Kansas Geological Survey.

Respectfully Submitted,

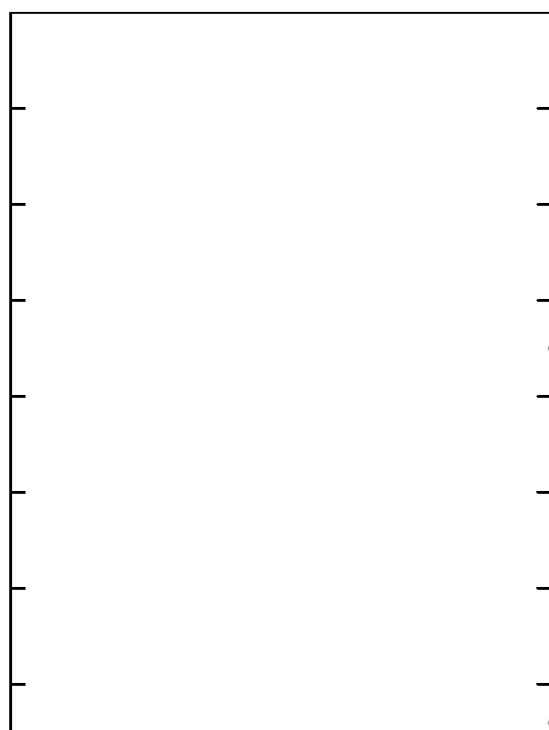
Jeff Christian

Jeff Christian

LITH.	0	DRILL TIME (MIN/FT)	10	DEPTH	SHW	SAMPLE DESCRIPTIONS	REMARKS
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2550

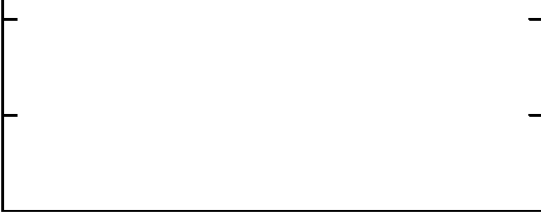


ANHYDRITE 2555' (+347)
E Log 2556' (+346)

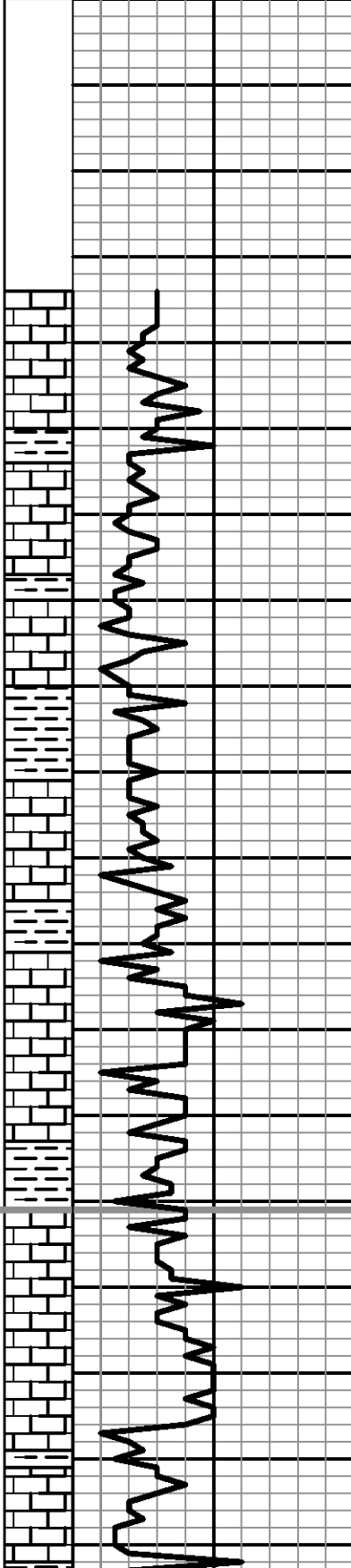
Base ANHYDRITE 2594' (+308)



2600



Note: Extra joint of pipe, not tallied on board, was found in hole when pipe was strapped on dst # 1.
27' Up Hole Correction made.



3600

3650

3700

3750

Ls: crm-lt gry, fn xln, dns, foss-ool in part, cpl pcs pr vug por, drk brn tarry stn, nsfo, no odor

Ls: crm-lt gry, fn xln, dns, foss-ool in part, sli glauc in part, pr vis por, ns

Ls: crm-lt brn, fn xln, sli grnlr, subchlky, foss-ool in part, sct fr intrxln-foss por, ns

Ls: crm-lt gry, fn xln, dns, foss-ool in part, pr vis por, ns

Ls: as above w/ Sh: gry

Sh: gry

Ls: crm-lt gry, fn xln, dns, sli foss, sli chrty, pr vis por, ns

Same

Ls: off wt-crm-lt gry, fn xln, subchlky, subool, pr introol por, blk sptd asph stn, nsfo, no odor

Sh: rdd/brn-some gry

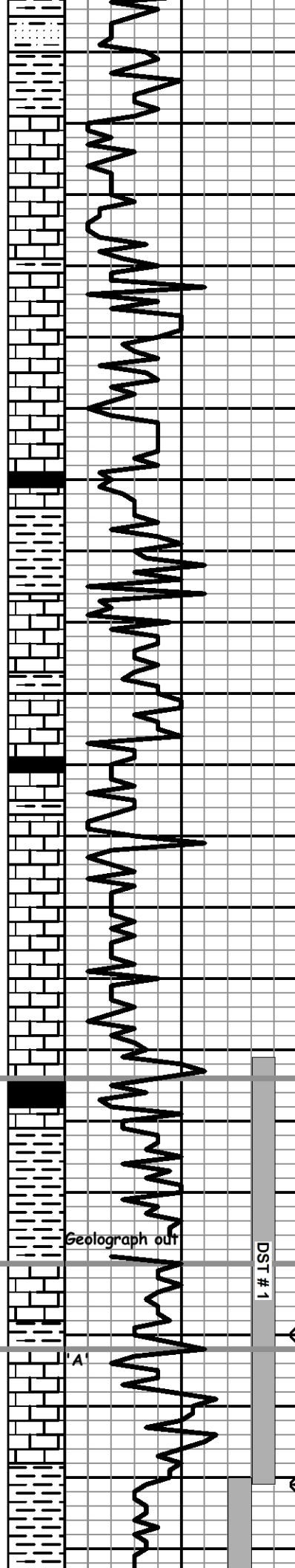
Ls: crm-lt brn, fn xln, sli grnlr, part dns, shly, por vis por, ns

Ls: lt gry, fn xln, dns, sli foss, pr vis por, trc asph stn, nsfo, no odor

Ls: crm-lt brn-lt gry, fn xln, sli grnlr, foss-ool in part, sct fr intrpart-vug por, ns

Ls: as above w/ sct wt chlk

TOPEKA 3741' (-839)



3800

Sst: lt gry, vy fn-fn grn, calc, hard, pr vis por, ns w/ Sh: gry-some lt grn & red/brn

Sh: gry-grn-red/brn

Ls: crm-lt brn, fn xln, sli grnlr, sli foss, pr intrxln por, ns

Ls: crm-lt gry, fn xln, sli grnlr, chlky in part, sli foss, pr-fr pp-intrxln por, ns

Ls: crm-lt gry, fn xln, dns, sli foss, pr vis por, ns

Ls: crm-lt gry, fn xln, sli grnlr, sli foss, pr vis por, ns

3850

Sh: blk, carb

mostly Ls: crm-lt gry, fn xln, dns, foss w/ sct Sh: gry-lt grn & trc Sltst: lt gry, calc, soft, ns

Sh: gry

Ls: crm-lt brn-lt gry, fn xln, part dns, ool in part, pr introol-vug por, ns w/ sct wt chlk

Ls: crm-lt brn-lt gry, fn xln, sli grnlr, part dns, sli foss, pr intrxln por, ns

trc Sh: blk, carb

3900

Ls: crm-lt brn-lt gry, fn xln, foss-ool in part, sct fr intrpart-vug por, ns

Ls: as above w/ abndnt wt chlk, trc asph stn

Same, vy chlky

Ls: lt gry, fn xln, dns, sli foss, pr vis por, ns

Sh: blk, carb

Ls: lt brn, fn xln, dns, sli foss

3950

Sh: gry-lt grn, gummy in part

Geograph out

Ls: lt gry, fn xln, ool, pr-some fr introol por, sli-fr s hvy fo, sli odor, drk brn subsat-sat stn

Ls: crm-lt gry, fn xln, dns, chrty, sct blk asph stn

Ls: crm-lt gry, fn xln, ool, pr-some fr introol-vug por, ss hvy fo, sli odor, drk brn sptd-subsat stn

20" Ls: crm-lt gry, fn xln, part dns, foss-ool, pr-fr intrpart-vug por, ssfo, fnt odor, brn sptd-subsat stn

Sh: red/brn-lt grn-gry

4000

DST # 1 3931' to 3991'
30"-60"-60"90"
IF: Blow Built to 9" ISI: No Return
FF: BOB/35" FSI: 1/4" Blow Back
RECOVERY: 372' total fluid
124' MCO (50%O, 50%M)
124' OCM (10%O, 90%M)
124' G&OCM (10%G, 10%O, 80%M)
IFP: 29-108# ISIP: 1276#
FFP: 149-172# FSIP: 1294#
IHP: 1961# FHP: 1888#
BHT: 118 deg. F

HEEBNER 3934' (-1032)

E Log 3934' (-1032)

PipeStrap @ 3991': 26.62' short to board
27' Up Hole Correction Made

TORONTO 3960' (-1058)

E Log 3960' (-1058)

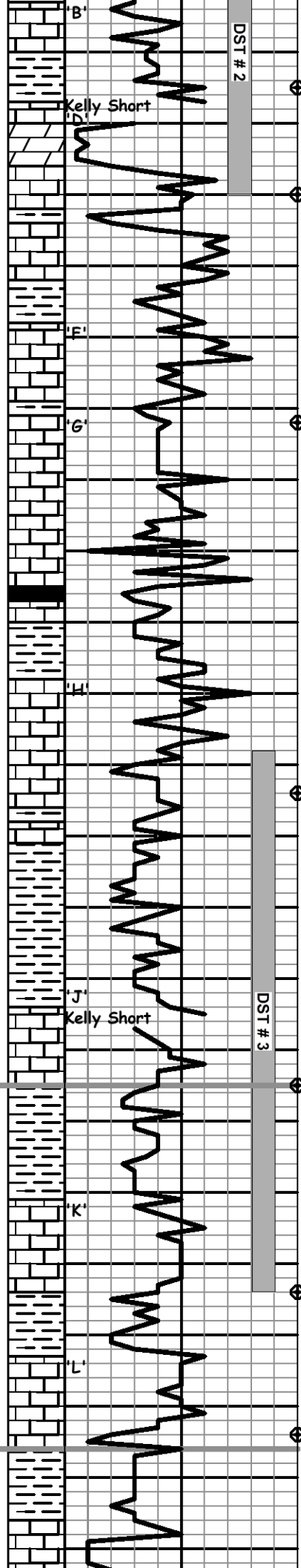
LANSING 3972' (-1070)

E Log 3972' (-1070)

Morgan Mud: 3991': 3/16/14
Wt. 9.2, Vis. 60, WL. 6.4, Chl. 1,800, LCM. 2

Morgan Mud: 3991': 3/17/14
Wt. 9.1, Vis. 52, WL. 6.8, Chl. 1,500, LCM. 1.5

DST # 2 3990' to 4030'



Ls: crm-lt gry, fn xln, ool, pr-trc fr introol-vug
 por, ssfo, fnt odor, lt brn sptd-subsat stn
 Sh: red/brn-lt grn

Dolo: crm-lt gry, fn xln, suc, fr intrxln-trc vug
 por, few pcs blk gil stn, nsfo, fnt odor
 sct pcs Ls: as above
 Ls: crm-lt gry, fn xln, dns, chlky in part, sli chrty,
 no vis por, ns
 Ls & Dolo: as above

Ls: crm-lt gry, fn xln, dns, foss-sli ool, no vis por,
 ns
 Sh: red/brn-gry/grn

Ls: crm-lt gry, fn xln, dns, subchlky, sli foss, sct
 pr pp por, ns, no odor

Ls: crm-lt gry, fn xln, sli grnlr in part, chlky, part
 dns, pr intrxln-pp por, ns, no odor

Ls: off wt-crm, fn xln, chlky, part dns, chrty, no
 vis por, ns

Ls: lt brn-lt gry, fn xln, dns, chrty
 Sh: blk, carb
 Ls: brn, fn xln, dns, foss
 Sh: gry-grn

Ls: crm-lt gry, fn xln, dns, sli foss-ool in part, no
 vis por, ns

Same
 Sh: gry-grn-some red/brn w/ Ls: gry, fn xln, dns,
 foss
 Sh: red/brn-some gry & grn

Same

Ls: crm-lt gry, fn xln, dns, sli foss in part, pr vug
 por, sct pcs ssfo, no odor, drk brn sptd stn

Sh: drk gry-grn, few pcs blk, carb
 Sh: red/brn-some gry & grn

Ls: off wt-lt gry, fn xln, dns, chlky in part, pr vis
 por, ns
 Ls: as above, few pcs ool, no vis por, ns
 Sh: red/brn-gry-grn

Ls: crm-lt gryfn xln, dns, chlky in part, sli foss in
 part, pr vis por, ns
 Ls: crm-lt gry, fn xln, dns, subchlky, pr vis por, ns

Sh: red/brn-some grn-lt brn, trc lt prpl

Sh: red/brn, some grn & gry, trc lt prpl w/ trc
 Sct: lt gry w/ fn xln, fnt, calc, ns

30"-60"-60"90"
 IF: BOB/12" ISI: No Return
 FF: BOB/20" FSI: No Return
 RECOVERY: 754' total fluid
 258' WCM (34%W, 66%M)
 496' MCW (72%W, 28%M)
 IFP: 112-225# ISIP: 1277#
 FFP: 233-403# FSIP: 1256#
 IHP: 1957# FHP: 1922#
 BHT: 121 deg. F

Morgan Mud: 4030'; 3/18/14
 Wt. 9.3, Vis. 54, WL. 7.2, Chl. 1,600, LCM. 2.0

4050

4100

DST # 3 4108' to 4184'
 30"-60"-30"60"
 IF: Surface Blow Died/21"
 FF: No Blow
 RECOVERY: 20' Mud nso
 IFP: 21-22# ISIP: 45#
 FFP: 22-22# FSIP: 33#
 IHP: 2203# FHP: 2002#
 BHT: 113 deg. F

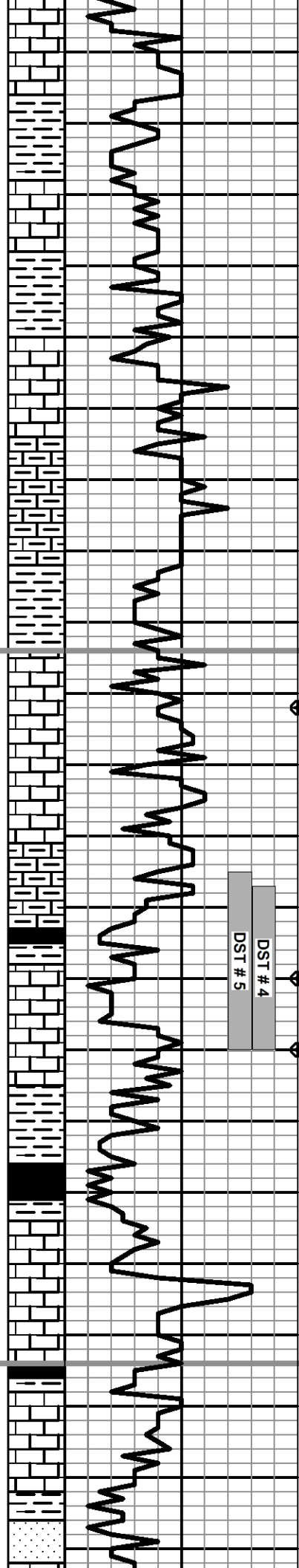
4150

STARK 4155' (-1253)
 E Log 4154' (-1252)

Morgan Mud: 4184'; 3/19/14
 Wt. 9.2, Vis. 53, WL. 6.4, Chl. 1,600, LCM. 4.0

4200

BKC 4206' (-1304)
 E Log 4205' (-1303)



4250

Sst: n gry, vy fr grn, fm, calc, ns

Ls: crm-lt gry, fn xln, dns, subchlky, pr vis por, ns

Ls & Sh: as above

Ls: crm-lt gry, fn xln, dns, subchlky, few pcs ool, pr vis por, ns

Sh: red/brn, slty w/ Ls: as above

Same

Ls: crm-lt gry, fn xln, subchlky, part dns, sct chrt (lt orng, sli grnlr), pr vis por, ns

4300

Ls: lt gry-lt brn, fn xln, sli grnlr in part, part dns w/ chrt, lt orng, grnlr-lt brn, vit, pr vis por, ns

Sh: lt gry-lt prpl, calc

Sh: gry

PAWNEE 4314' (-1412)

E Log 4316' (-1414)

Ls: crm-lt brn-lt gry, fn xln, part chlky, part dns, sli chrty, pr vis por, ns

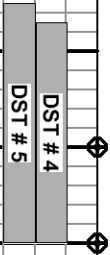
Ls: crm-lt brn-lt gry, fn xln, part dns, sli ool, sct chrt, few pcs pr pp por, ns

Same

4350

Sh: grk gry-blk, carb on part

DST # 4 4347' to 4370'
 30"-Tool Malfunction
 IF: Surface Blow Built to 3/4"
 ISI: Tool Would Not Rotate
 RECOVERY: 15' Mud oil spts
 IFP: 15-44# ISIP: not taken
 FFP: not taken FSIP: not taken
 IHP: 2194# FHP: 2128#
 BHT: 116 deg. F



Ls: lt gry, fn xln, subool, pr-fr pp-vug por, sli-fr sfo, sli odor, rich brn mostly sat stn

Morgan Mud: 4370'; 3/20/14
 Wt. 9.1, Vis. 48, WL. 6.8, Chl. 1,600, LCM. 4.0

Ls: crm-lt gry, fn xln, subchlky, subool in part, pr vis por, ns

DST # 5 4345' to 4370'
 30"-60"-30"60"
 IF: Blow Built to 3/4"
 FF: Blow Built to 3/4"
 RECOVERY: 15' Mud w/ oil spts
 IFP: 17-40# ISIP: 1254#
 FFP: 35-49# FSIP: 1253#
 IHP: 2168# FHP: 2105#
 BHT: 124 deg. F

Ls: lt gry, fn xln, part dns, argil in part, pyritic in part, pr vis por, ns w/ Sh: gry-grn, somered/brn & prpl

Sh: drk gry-blk, carb in part

4400

Ls: crm-lt gry, fn xln, comp, part dns, foss, pr vis por, ns

Ls: lt gry-lt brn, fn xln, dns, sli foss, no vis por, ns

CHEROKEE 4414' (-1512)

E Log 4416' (-1514)

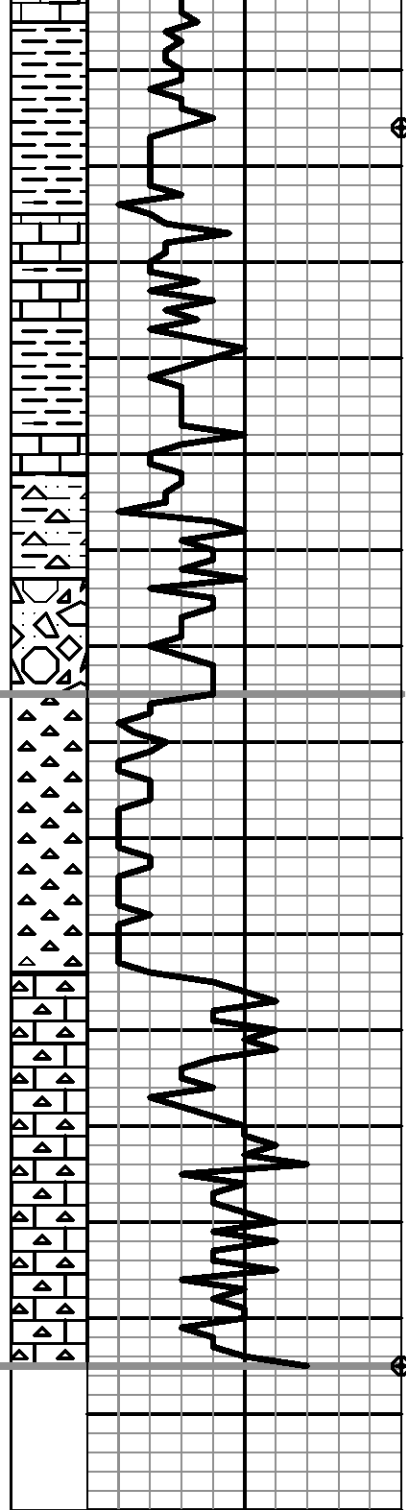
sct Sh: drk gry-blk, carb in part

Ls: lt brn-lt gry, fn xln, dns, sli foss, some crm, chlky, no vis por, ns

Sst: crm-lt gry, fn-med-some crs grn, pr srt, subfri, calc, glauc, fr por, ns

Ls: crm-lt gry, fn xln, dns, chlky in part, pr vis

Morgan Mud: 4440'; 3/21/14



4450

4500

4550

4600

por, ns

Ls: crm-lt gry-red std, fn xln, dns, ns

Sh: red/brn

Sh: red/brn, sndy, some gry & grn

Sh: as above w/ Ls: crm-lt gry-lt brn, fn xln, subchky, part dns, ns

Sh: red/brn-lt grn, sndy, trc yell sh, w/ Ls: lt gry-lt brn-prpl/brn, fn xln, dns, ns

Sh: as above, incrs yell w/ sct cgl type chrt, orng, yell, vit, subopq

Sh & Chrt: as above w/ Chrt: wt-crm, wthrd, some fresh, ns

Chrt: tan-lt gry, fresh, vit, some wt-crm, wthrd, ns

Chrt: mostly wt-lt gry, fresh/wthrd 50/50, foss in part, trip in part, some tan fresh, ns

Chrt: wt-crm-lt gry, fresh/wthrd 70/30, foss, some trip, gd vug-trip por, ns

Ls: wt-crm, fn xln, chlky, chrty, por vis por, ns

Ls: wt-crm-lt gry, fn xln, chlky, subool in part, chrty, pr vis por, ns

Ls: crm-lt gry-lt brn, fn xln, chlky, subool in part, chrty, pr vis por, ns

Ls: as above, fr amnt wt chlk, ns

Mississippian 4515' (-1613)

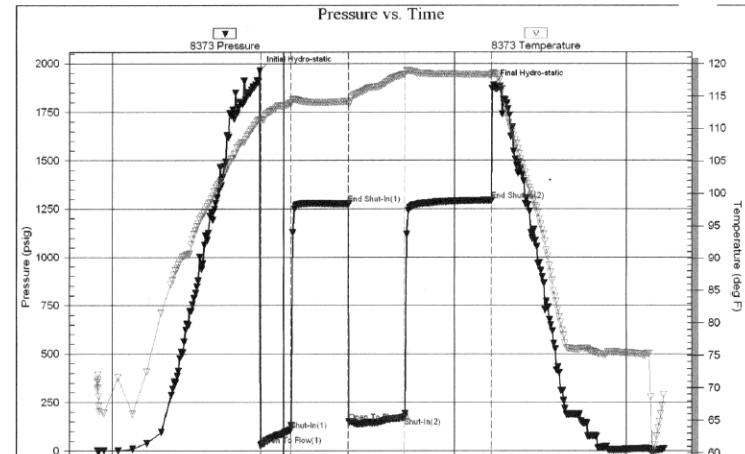
E Log 4516' (-1614)

RTD 4585' (-1683)

E Log 4589' (-1687)

Drill Stem Test Charts

Serial #: 8373 Inside Murfin Drilling Company Stevenson 1-14 DST Test Number: #1



Serial #: 8673 Inside Murfin Drilling Stevenson #1-14 DST Test Number: #2

